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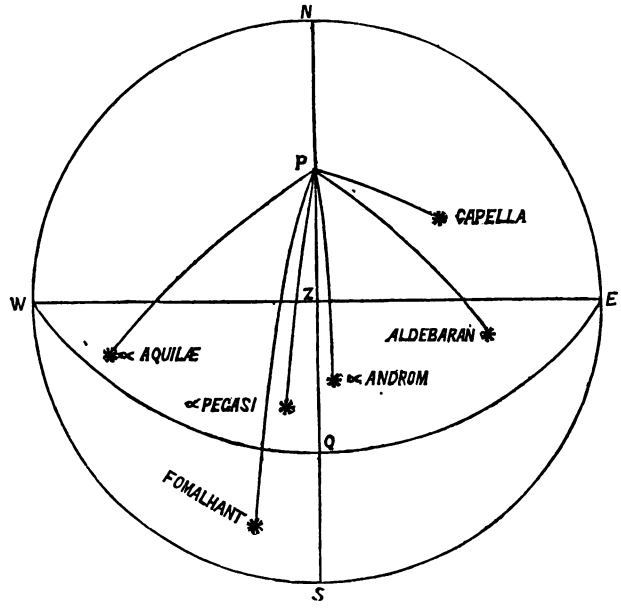
HAND-BOOK FOR THE STARS.

H. W. JEANS, F.R.A.S.

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Diagram for 9^h P.M. *on Nov.* 1 *in lat.* 50° N.

(See Art. 145.)



HAND-BOOK FOR THE STARS:

CONTAINING

RULES

FOR

FINDING THE NAMES AND POSITIONS

OF ALL

THE STARS OF THE FIRST AND SECOND MAGNITUDE.

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PREFACE.

To this edition is added a method of learning the names of the stars by means of a Diagram, of easy construction, that will show the face of the heavens for any time and place (see Art. 145). The figure in that article is constructed for Nov. 1 at 9^h P.M., but it will be sufficiently correct for a few days both before and after Nov. 1. The value, however, of a diagram of this kind will be greatly enhanced if, after having taken some pains in constructing it, we can make it available for any day at a considerable distance both before and after the day and time for which it is constructed. Now this can be done by considering that since the acceleration of sidereal on mean solar time is about $3^m\ 56^s$ daily (*Nav.* Part II. Prob. 4), we have only to multiply the number of days in the interval by $3^m\ 56^s$, and then add or subtract the quantity from the time for which the diagram has been constructed, to get the time on the required day that the stars will have the same hour-angles as in the diagram, and therefore be in the same position with respect to the spectator's horizon. The method of proceeding will be seen by the following Rule: If the day of the month is *before* the day for which the diagram has been constructed, *add* to the diagram time the quantity got by multiplying $3^m\ 56^s$ by the number of days in the interval. If *after*, *subtract* the same quantity. The result in both cases will be the time when the diagram will be correct for the respective days. Example: Find the times on September 10 and on December 21, when the diagram constructed for November 1 at 9^h P.M. will also show correctly the face of the heavens.

Interval between Sept. 10 and Nov. 1 = 50 days before Nov. 1.

,, ,, Dec. 21 ,, Nov. 1 = 50 days after.

and $3^m\ 56^s \times 50 = 3^h\ 17^m$.

$\therefore 9^h + 3^h\ 17^m = 12^h\ 17^m$, the time on Sept. 10.

and $9^h - 3^h\ 17^m = 5^h\ 43^m$, ,, Dec. 21.

The diagram may therefore be considered as constructed for September 10 at $12^h\ 17^m$, and for December 21 at $5^h\ 43^m$.

LANGSTONE HOUSE, HAVANT,
November 30, 1867.

CONTENTS.

CONSTELLATIONS NORTH OF THE ZODIAC.

	ART.
The Constellation of the Great Bear or Ursa Major	21, 22
The Constellation of the Little Bear or Ursa Minor	23
To find the Pole Star and place of the North Pole	26, 27
The Constellation of Cassiopeia	28, 29
To find Cassiopeia	30
The Constellations of Pegasus, Andromeda, and Perseus	32, 33
To find Pegasus, Andromeda, and Perseus	34, 37
α, β, and γ Pegasi	39, 40
α, β, and γ Andromedæ	41, 43
α Persei and β Persei or β Medusæ	44, 45
The Constellation of Auriga	47, 48
To find α and β Aurigæ	49, 50
γ Aurigæ or β Tauri	51
The Constellation of Cygnus or the Swan	52, 53
To find α Cygni	54
The Constellation of Bootes	55, 56
To find α Bootis or Arcturus	57
The Constellation of Lyra or the Harp	58
To find α Lyræ or Vega	60
The Constellation of Aquila or the Eagle	61, 62
To find α, β, and γ Aquilæ	63
The Constellation of Draco or the Dragon	64, 65
To find α, β, and γ Draconis	66, 67
To find the Position of the North Pole of the Ecliptic	68
The Constellation of Corona Borealis or the Northern Crown	69, 70
To find α Coronæ Borealis or Gemma	71
The Constellation of Serpens or the Serpent	72, 73
To find α Serpentis	74

ART.
The Constellation of Canes Venatici or the Hunting-dogs . . . 75
To find 12 Canum Venaticorum or Cor Caroli 76
The Constellations of Ophiuchus and Hercules. 77, 78
To find α Ophiuchi and α Herculis 79
Use of the Transit Table for selecting the proper Stars to observe during each Month of the Year 80

CONSTELLATIONS OF THE ZODIAC.

The Constellation of Aries or the Ram 81
To find α, β, and γ Arietis 82, 83
The Constellation of Taurus or the Bull 84
The Pleiades and Hyades 85
To find α Tauri and β Tauri or γ Aurigæ 86, 51
The Constellation of Gemini or the Twins 87, 88
To find α^2 and β Geminorum (Castor and Pollux) . . . 89
The Constellation of Cancer or the Crab 90
The Constellation of Leo or the Lion 91, 92
To find α, β, and γ Leonis 93
The Constellation of Virgo or the Virgin 94, 95
To find Spica or α Virginis 96
The Constellation of Libra or the Balance 97, 98
To find α^2 and β Libræ 99
The Constellation of Scorpio or the Scorpion 100, 101
To find α Scorpii or Antares 102
The remaining Signs of the Zodiac 103

CONSTELLATIONS SOUTH OF THE ZODIAC.

The Constellation of Cetus or the Whale 104, 105
To find α and β Ceti 106, 107
The Constellation of Pisces Australes or the Southern Fishes . 108, 109
To find α Piscium Australium or Fomalhaut 110
The Constellation of Orion 111, 112
To find α, β, γ, δ, ϵ, ζ Orionis 113, 115
The Constellation of Canis Major or the Great Dog 117
To find α Canis Majoris or Sirius 118
The Constellation of Canis Minor or the Little Dog . . . 119, 120
To find α Canis Minoris or Procyon 121

ART.

The Constellation of the Hydra 122, 123
To find α Hydræ or Alphard 124
The Constellation of the Ship Argo 125, 126
To find α, β, θ, ι, δ, γ, ζ, and η Argus 127, 130
The Constellations of the Centaur and the Cross . . . 131, 132
To find θ, α and β Centauri 133, 134
α, β, γ, δ Crucis 135
The Constellation of Eridanus 136, 137
To find α Eridani or Achernar 138
The Constellations of the Dove, the Phœnix, the Southern Triangle, the Peacock, and the Crane 139
To find α in the Dove 140
α in the Phœnix 141
α in the Southern Triangle 142
α in the Peacock 142
α in the Crane 142
To find the Planets Jupiter, Mars, Saturn, and Venus . . . 143
General Method for finding Stars below the Second Magnitude . . 144
Method of Constructing a Diagram to show the face of the Heavens at any given time and place 145
Bearings or Positions of the principal Constellations on the first of each month at 9^h P.M. in lat. 50° N. P. 47
Approximate Mean Times when the principal Stars bear due East or West of a Spectator in lat. 50° N. P. 48

HAND-BOOK FOR THE STARS.

CHAPTER I.

CLASSIFICATION OF STARS—TERMS AND DEFINITIONS IN ASTRONOMY.

(1.) THE stars are divided into classes according to their apparent *magnitudes.*

(2.) By the term magnitude here used we are not to understand their mass or volume, but only the degree of brightness of each; for on account of their immeasurable distance* they appear, when viewed through the most powerful telescopes, only as bright points, without any apparent size or diameter. For the same reason we cannot discover any alteration in their positions with respect to each other in consequence of the motion of the earth in its orbit, although it shifts its place nearly 200 millions of miles in the year: they are on this account called Fixed Stars.

(3.) The degree of brightness of a star is expressed by saying it is a primary, secondary, or tertiary star; or one of the first, second, third, &c. magnitude. As far as the fifth or sixth magnitude, the stars can be perceived by the unassisted eye, on a dark night, when the sky is clear; below this magnitude it is necessary to use a telescope.

The telescopic stars are innumerable, and of almost every degree of brightness; some of them are said to be of the thousandth magnitude, and even of a brightness less than that.

(4.) In the following pages our attention will be chiefly confined to the brightest, or those of the *first* and *second* magnitude; such only being used for the purposes of Navigation—the seaman seldom requiring any others, except in a few cases.

(5.) There are two methods by which we may acquire a knowledge of the names and positions of the fixed stars. The FIRST is by referring the star, the name of which we wish to know, to some other stars already known.

* The nearest cannot be less than 600,000 times the distance of the earth from the sun. The small star 61 Cygni, between the 5th and 6th magnitude, according to the observations of Bessel, has a parallax of 0″·3136. If this observation be correct, which there is reason to believe it is, its distance is 657,732 times the mean distance of the earth from the sun; or, 62,481,500,000,000 miles. *Cæli enarrant gloriam Dei.*

This is done by supposing a line to pass through two or more such known stars, and when produced to a certain distance (estimated by the eye or otherwise), to pass through, or near, the star whose name is required; we then have recourse to the globe, or to a map of the heavens, on which we trace, in the same manner, a line of similar length from the known stars, when we readily discover at the termination of the line the corresponding star to the one observed in the heavens.

(6.) But a globe or map used for the purpose of learning the stars is attended with this inconvenience: the spectator's eye is supposed on the outside of this representation of the heavens, when, in fact, he himself is placed in the center of the celestial concave: this has always led to a difficulty in learning to identify the stars in the heavens by means of a celestial globe. We shall therefore in the following pages adopt the more simple plan of making use of diagrams that actually represent the relative positions of some of the principal stars, that is, *as they appear to the spectator*, and by means of these deduce simple rules for discovering others.

(7.) The SECOND METHOD is by calculating the distance of the first point of Aries (p. 6) from the meridian for *any given hour*, and ascertaining, by means of a catalogue of the right ascensions and declinations of the stars, what stars must at that time be above the horizon and near the meridian; then, by comparing their declinations and right ascensions, we may easily learn the name of each particular star. The table containing the Transits of all the stars of the first and second magnitude, at the end of this volume, will be found to simplify this method of acquiring a knowledge of the stars.

(8.) This table deserves more especially the attention of the seaman, as it will enable him to make a rough sketch or map of the heavens near the celestial meridian or prime vertical at any required hour of the night, and consequently to discover the most suitable stars for finding his place, *i. e.* his longitude and latitude, at that time.*

* He may also, by means of this table, and with very little assistance from the other part of the book, learn the names of nearly all the principal stars; for the time, within a few minutes, when each will pass the meridian for every fifth day in the year, and for any place, can be seen in the table; its meridian altitude is easily computed by the rule on the last page of the table. The observer, therefore, has only to look towards the meridian at the time of the star's transit, and at the estimated height above the horizon, to see the star in question pass the meridian. For example, suppose on March 1, in latitude 50° N., it is required to discover the star Sirius. Referring to the table, we find its transit takes place on March 1, at 8^h P.M., and, by the rule, its altitude at that time is about 24°. Looking towards the south at 8 o'clock in the evening, and at the above altitude (which may be easily estimated within a degree or two by the eye), the observer will see a large star occupying that place in the heavens, which must be Sirius. Again, on August 1, at 8^h P.M. in lat. 50° N., a large star was observed near the meridian at an estimated altitude of about 12°; to find its name, look in the table under August 1, and at 7^h 40^m it appears that Antares (α Scorpii) passes the meridian at an altitude of about 14°. As this agrees nearly with the observation, the star observed is most probably Antares.

The Constellations.

(9.) For the purpose of identifying the stars, they have been formed, from the earliest antiquity, into groups, each group being called a *constellation.* The form of a constellation was imagined to represent some animal or other image, altogether arbitrary, and the stars are named according to the place they occupy in it: thus we say, the *Lion's tail,* the *Scorpion's heart,* the *eye of the Bull,* &c. There is rarely even the least resemblance between these animals and the configurations formed by the stars; and it would have been desirable if, in the first instance, a more scientific grouping of the heavenly bodies had been adopted.

(10.) *Proper* names have been given to the most conspicuous of the stars; besides which, each star in a constellation is distinguished by a Greek or Roman letter, and sometimes, when the number is great, by a figure or number and also by a character, such as α^2 (alpha 2), combining both a letter and figure. The first letter of the Greek alphabet α (alpha) is usually given to the brightest in the constellation, the second letter β (beta) to the next brightest, and so on to ω (omega), the last letter. The Greek letters being exhausted, the *Roman* letters are then used in the same order. These letters were formerly sufficient to distinguish all the stars in a constellation; but afterwards, as the power of the telescope increased, the number of stars in each group was found far to exceed the letters of these alphabets; they were then characterised by means of numerals. It is easy now to understand what is meant by α of the Little Bear, α Tauri, or Aldebaran, 61 Cygni, α^2 Capricorni, &c.

(11.) The small letters of the Greek alphabet are principally used for distinguishing the brightest of the fixed stars—they are as follows:

α . . . alpha.	ι . . . iota.	ρ . . . ro.
β . . . beta.	$\varkappa$. . . kappa.	σ . . . sigma.
γ . . . gamma.	λ . . . lambda.	τ . . . tau.
δ . . . delta.	μ . . . mu.	υ . . . upsilon.
ε . . . epsilon.	ν . . . nu.	φ . . . phi.
ζ . . . zeta.	ξ . . . ksi.	χ . . . ki.
η . . . eta.	o . . . omicron.	ψ . . . psi.
θ . . . theta.	π . . . pi.	ω . . . omega.

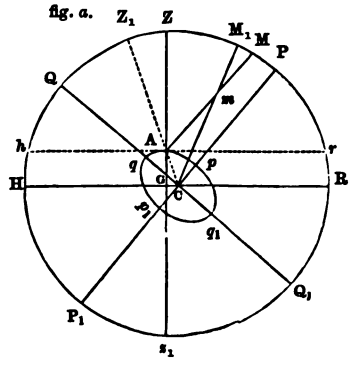
Astronomical Terms and Definitions.

We will here insert a few of the principal astronomical terms and definitions. They should be known by the observer before he proceeds to the rules given in this book for finding the stars.

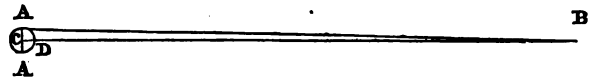
(12.) The astronomer conceives all the heavenly bodies to be contained within a hollow sphere of great but indefinite magnitude, the interior surface of which is called the *celestial concave,* its center coinciding with the center of the earth; and in all his calculations he employs, instead of the actual

place which any of the heavenly bodies occupies, the point in which the celestial concave is cut by a straight line drawn through the centers of the earth and of the body. This point is called the *true* place of the heavenly body: thus, fig. *a*, let PHP_1R represent the celestial concave, *m* a heavenly body, C the center of the earth; join C*m*, and produce it to cut the celestial concave in M_1; then M_1 is called the *true* place of the heavenly body *m*. Suppose A to be the place of a spectator on the surface of the earth; join A*m*, and produce it to cut the celestial concave in M; then the point M is called the *apparent* place of *m*.

fig. *a*.



It is evident that the magnitude of the angle at *m*, namely, A*m*C, will diminish as the distance C*m* increases; and we may conceive *m* to be placed so far from the earth that two lines, as A*m*, C*m* drawn to *m*, one from the surface, and the other from the center of the earth, will form an angle inappreciable, or so small that it cannot be measured by our instruments. The stars are found to be at a distance so enormous, that if we suppose the elliptical figure A*pq* to represent the earth's *orbit*, two lines drawn, the



one from the center of the earth's orbit C, and the other from a point as A in the orbit, make at the heavenly body an angle too small to be measured; with the exception perhaps of a few which seem to exhibit to astronomers a change of position depending on their distance from the earth. Hence it follows, that the earth's annual motion in its orbit has no effect on the places of the heavenly bodies, and we may therefore, so far as the fixed stars are concerned, conceive the earth to be always in one place (namely, the center of the celestial concave), and that the cause of the apparent motion of the heavenly bodies from east to west is simply the earth's daily motion round its axis in the opposite direction. The small corrections of the places of the stars arising from aberration, &c. will not affect the rules given in this book. The small angle A*m*C which we have supposed to exist in a few instances, is called the annual parallax of the heavenly body.

The *axis* of the earth is that diameter about which it revolves; the *poles* of the earth are the extremities of the axis; the *axis of the heavens* is the axis of the earth produced both ways to the celestial concave; the *poles of the heavens* are the extremities of this axis. The heavens may therefore be conceived to revolve about this axis; and if the extremities, or poles of the heavens, were luminous points, an observer would see all the heavenly bodies revolving in circles round these two points as centers; their apparent motion

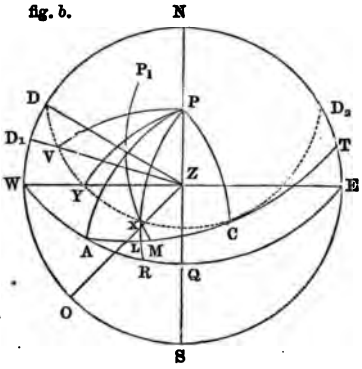
of course being slower the nearer they are to the poles, but each describing a circle in the same time, namely, the time the earth takes to make one complete revolution about its axis.

The *terrestrial equator* is that great circle on the surface of the earth which is equidistant from each of its poles; the *celestial equator* is that great circle in the celestial concave equidistant from each of the poles of the heavens, and may therefore be supposed to be formed by the expansion of the terrestrial equator to the celestial concave. In fig. *a*, suppose pqp_1q_1 to represent the earth, and PQP_1Q_1 the celestial concave, pp_1 the diameter about which the earth revolves; then, from what has been said, pp_1 is the axis of the earth, PP_1 the axis of the heavens, p and p_1 the poles of the earth, P and P_1 the poles of the heavens, qq_1 the terrestrial equator, QQ_1 the celestial equator.

A circle touching the earth where the spectator stands, and extending to the celestial concave, is called the *visible* horizon; and a circle parallel to the visible horizon passing through the center of the earth, and extending to the celestial concave, is called the *rational* horizon; thus, *hr* represents the visible, and HR the rational, horizon of the spectator at A. These two circles, however, form one and the same in the celestial concave; thus the points R and *r* in the figure must be supposed to coincide. This may be readily conceived when we consider that the distance of any two points on the surface of the earth can make no sensible angle at the celestial concave; therefore, either of these two circles is to be understood by the word *horizon.* Of the poles of the horizon of any place A, that which is over the place is called the *zenith*, and the other the *nadir;* as Z and z_1 in fig. *a*.

Circles of altitude, or *vertical circles*, are great circles passing through the zenith; the *celestial meridian* is the circle of altitude which passes through the poles of the heavens; the *north* and *south* points of the horizon are the points through which the celestial meridian passes; the *prime vertical* is the circle of altitude at right angles to the celestial meridian; the *east* and *west* points of the horizon are the points through which the prime vertical passes.

fig. *b*.



These circles will be more clearly understood by means of fig. *b*, in which the circle NWSE represents the horizon of a spectator who is supposed to be below Z in the plane of the circle; the point Z is the zenith of the spectator, and the lines NZS, WZE, ZO, are vertical circles, or circles of altitude. If we suppose NZS to be the celestial meridian, then WZE is the prime vertical, and the points N, S, E, W the north, south, east, and west points of the horizon. The pole P of the heavens must be somewhere in the meridian NZS; its altitude NP above the horizon is equal to the latitude of the spectator; this will be shown in page 7.

Since the horizon and celestial equator are both perpendicular to the celestial meridian, the points where the two former circles intersect each other must be 90° distant from every part of the meridian [Jeans' *Trigonometry*, Part II. Art. (65), Cor. 3]; hence the celestial equator cuts the horizon in the east and west points; draw the curve EQW to cut the horizon in the east and west points; this will represent the celestial equator. Since the poles of the heavens are 90° distant from the equator, take QP=90°. P is called the elevated pole, or the one above the horizon, and NP is the altitude of the pole.

The arc ZQ (figures *a* and *b*), or distance of the zenith from the equator, is always equal to the latitude of the spectator: this may be more clearly seen in fig. *a*, where the projection is made on the plane of the meridian; in fig. *b* the projection is made on the plane of the horizon. In fig. *a*, PZH represents the celestial meridian, Z the zenith of a spectator at A, *hr* or HR his horizon, P the elevated pole; QQ_1, drawn at right angles to PP_1 the axis of the heavens, represents the plane of the celestial equator; then the angle AG*q*=ZGQ (the earth A*qp* being considered as a spheroid) is the latitude of the spectator; but since the distance of the points Z and Q from the earth is indefinitely great, therefore the angles ZGQ and ZCQ are equal, and the measure of either is the arc ZQ: hence ZQ (figures *a* and *b*), the distance of the zenith from the equator, is equal to the latitude of the spectator.* ZP, the complement of ZQ, is called the *colatitude*.

Observations show that the sun appears to move eastward in the celestial concave with a variable velocity, completing in the course of a year one revolution. The great circle that the sun thus appears to describe among the fixed stars is called the *ecliptic:* it is found to be inclined to the celestial equator at an angle of about 23° 28′: this angle is called the *obliquity* of the ecliptic. In fig. *b*, the curve ACT represents a portion of the ecliptic, and the angle MAR the obliquity. The points in which the equator and ecliptic intersect are called the *first point* of Aries and *first point* of Libra; the former, being the point where the sun crosses the equator northward, is called the vernal equinox, and the latter the autumnal equinox. That belt or space of the heavens which extends about 8° on each side of the ecliptic, is called the *Zodiac*. It is divided into twelve parts or signs, called the *signs of the Zodiac:* they are named as follows:

North of the Equator.

Aries, Taurus, Gemini, Cancer, Leo, Virgo.

South of the Equator.

Libra, Scorpius, Sagittarius, Capricornus, Aquarius, Pisces.

* If CA be joined, and produced to cut the celestial concave in a point Z_1, the arc Z_1Q is called the latitude *on the sphere*, or the reduced latitude. The correction of the latitude for the spheroidal figure of the earth is used in astronomy. The elliptical form of the earth exhibited in figure (p. 4) is exaggerated, for the purpose of more clearly showing this correction.

Circles of declination are great circles passing through the poles of the heavens; *circles of latitude* are great circles passing through the poles of the ecliptic: thus (fig. *b*) PR, PA, &c. are circles of declination; and if P_1 represent the pole of the ecliptic, P_1M is a circle of latitude. *Parallels* of declination and of latitude are small circles parallel respectively to the celestial equator and ecliptic: thus the dotted line DCD_2 (fig. *b*), drawn parallel to the equator WQE, is a parallel of declination; and a similar line drawn parallel to the ecliptic ACT is a parallel of latitude.

The *declination* of a heavenly body is the arc of the circle of declination passing through its place in the celestial concave, intercepted between the place and the equator. The *right ascension* of a heavenly body is the arc of the celestial equator intercepted between the first point of Aries and the circle of declination passing through the place of the body in the celestial concave; or, it may be defined to be, the angle at the pole of the heavens between the circles of declination passing through the first point of Aries and the place of the heavenly body; the arc or angle being measured round the equator or the pole from west through south to east, or in the direction of the earth's motion round the sun: thus, in fig. *b*, if X be the place of a heavenly body, and PXR a circle of declination passing through it, XR is the declination of the heavenly body, and the arc AR, or the angle APR, is its right ascension. In like manner, if a circle of latitude be drawn through any point in the celestial concave, the part of it between the point and the ecliptic is called the *latitude* of the point, and the arc of the ecliptic extending eastward from the first point of Aries to the circle of latitude passing through the point is called the *longitude* of the point: thus the latitude of X is XM and the longitude is AM.

The *altitude* of a heavenly body is the *arc* of a circle of altitude intercepted between the place of the body and the horizon: thus XO is the altitude of X. The *azimuth* of a heavenly body is the arc of the horizon intercepted between the north or south points and the circle of altitude passing through the place of the body; or, it may be defined to be, the angle at the zenith between the celestial meridian and the circle of altitude passing through the body: thus (fig. *b*) SO or NO, or the angles OZS or OZN, is the azimuth of X. The *amplitude* of a heavenly body is the distance from the east point at which it rises, or the distance from the west point at which it sets; these arcs or distances being measured on the horizon: thus the amplitude of X is the arc WD or ED_2 (the dotted line D_2XD being the arc of a parallel described by X from rising at D_2 to setting at D). The *hour angle* of a heavenly body is the angle at the pole between the celestial meridian and the circle of declination passing through the place of the body: thus ZPX is the hour angle of X.

The altitude of the pole above the horizon is equal to the latitude of the spectator.

This may be proved as follows:

In fig. (p. 5), if P represents the pole, then NP is its altitude, and ZQ the atitude of spectator (p. 6).

Now ZN=PQ, each being equal to 90°;

taking away PZ, common to both, we have

altitude PN=ZQ=latitude.

(13.) The number of stars whose positions are at present determined amounts to about seventy thousand: the constellations exceed one hundred. In the following pages we shall notice only the principal constellations, or those in which stars of the first and second magnitude are found.

(14.) The number of the stars of the first magnitude is twenty-one, viz.:

North of the Equator, Nine, of First Magnitude.

Characteristic Name.	Proper Name.	Declination.	Art.
α Aurigæ . .	Capella . .	46° N. . .	(49)
α Lyræ . .	Vega . .	39 . .	(60)
α Geminorum . .	Castor . .	32 . .	(89)
α Bootis . .	Arcturus . .	20 . .	(57)
α Tauri . .	Aldebaran . .	16 . .	(86)
α Leonis . .	Regulus . .	13 . .	(93)
α Aquilæ . .	Altair . .	8 . .	(63)
α Orionis . .	Betelguese . .	7 . .	(113)
α Canis Minoris . .	Procyon . .	6 . .	(121)

α Geminorum and α Aquilæ are sometimes reckoned among stars of the second magnitude.

South of the Equator, Twelve, of First Magnitude.

Characteristic Name.	Proper Name.	Declination.	Art.
α Hydræ . .	Alphard . .	8° S. . .	(124)
β Orionis . .	Rigel . .	8 . .	(114)
α Virginis . .	Spica . .	10 . .	(96)
α Canis Majoris . .	Sirius . .	17 . .	(118)
α Scorpii . .	Antares . .	26 . .	(102)
α Piscis Australis .	Fomalhaut . .	30 . .	(110)
α Argus . .	Canopus . .	53 . .	(127)
α Eridani . .	Achernar . .	58 . .	(138)
η Argus* . .		59 . .	(130)
β Centauri . .		60 . .	(134)
α^2 Centauri . .		60 . .	(134)
α^1 Crucis . .		62 . .	(135)

(15.) The last-mentioned six stars are not visible to us in lat. 50° N.

(16.) The following list contains all the stars of the *second* magnitude, and a few of the most important of the third, viz.:

* The star η Argus, placed here among stars of the first magnitude, is described in the Astro. Soc. Catalogue for 1830 as of the second magnitude. It increased to one of the brightest of the first magnitude. See Art. (130). It is now sometimes reckoned again as a star of the second magnitude.

North of the Equator, Thirty-two, of Second Magnitude.

Characteristic Name.	Declination.	Art.
The Pole Star	89° N.	(26)
α Draconis (3d mag.)	65	(66)
α Ursæ Majoris	63	(22)
β Cassiopeiæ	58	(31)
β Ursæ Majoris	57	(22)
γ Ursæ Majoris	55	(22)
β Draconis	52	(67)
γ Draconis	51	(67)
η Ursæ Majoris	50	(22)
α Persei	49	(44)
β Aurigæ	45	(50)
α Cygni	45	(54)
γ Andromedæ (3d mag.)	42	(43)
β Persei	40	(45)
12 Canum Venaticorum	39	(76)
β Andromedæ	35	(42)
β Geminorum	28	(89)
β Tauri	28	(51)
α Andromedæ	28	(41)
β Pegasi	27	(40)
α Coronæ Borealis	27	(71)
α Arietis (3d mag.)	23	(83)
γ Leonis	21	(93)
β Leonis	15	(93)
α Herculis	15	(79)
α Pegasi	14	(39)
γ Pegasi	14	(40)
α Ophiuchi	13	(79)
ε Pegasi	9	(40)
α Serpentis	7	(74)
γ Orionis	6	(114)
α Ceti	3	(106)

South of the Equator, Twenty, of Second Magnitude.

δ Orionis	0° S.	(115)
ε Orionis	1	(115)
β Libræ	9	(99)
α^2 Libræ	15	(99)
β Ceti	19	(107)
β' Scorpii	19	(102)
ε Canis Majoris	29	(118)

Characteristic Name.	Declination.	Art.
α Columbæ	34° S. . .	(140)
θ Centauri	36 . .	(133)
α Phœnicis	43 . .	(141)
γ Argus	47 . .	(129)
α Gruis	48 . .	(142)
γ Crucis	56 . .	(135)
α Pavonis	57 . .	(142)
ι Argus	59 . .	(129)
β Crucis	59 . .	(135)
ε Argus	59 . .	(129)
θ Argus	63 . .	(129)
β Argus	69 . .	(128)
α Trianguli Australis . .	69 . .	(142)

All the stars in this second list are visible to us in lat. 50° N. except the last eleven.

(17). The stars of the third magnitude are much less luminous than the preceding; they can, however, be easily distinguished by the naked eye; they are seldom used for the purposes of navigation. Their number is about TWO HUNDRED.

(18.) The number of stars of lower magnitude increases in proportion as the order of their magnitudes diminishes; those whose positions are already determined, as far as the seventh magnitude inclusive, amount to nearly TWENTY THOUSAND.

(19.) It will be found convenient to describe the constellations in the following order:

1st. The northern constellations (or those north of the Zodiac).

2d. The constellations of the Zodiac.

3d. The southern constellations (or those south of the Zodiac).

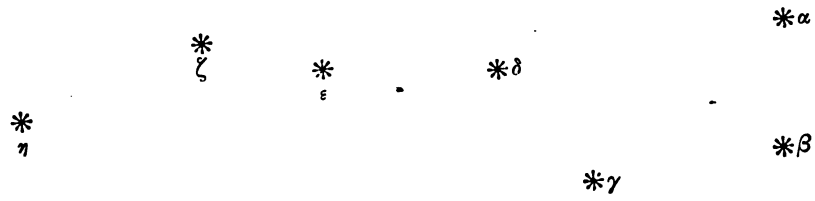
CHAPTER II.

THE PRINCIPAL STARS IN THE NORTHERN CONSTELLATIONS.

(20.) If a spectator in the northern hemisphere look towards the north on any fine night, he will see several groups of stars which are easily distinguished from each other; the most remarkable is the constellation of the *Great Bear*, represented in figure 1. The stars in this constellation we shall therefore use for the purpose of discovering others in the manner pointed out in Art. 5.

(21.) The Great Bear (Ursa Major) consists of seven principal stars.

The Great Bear. (Fig. 1.)



Char.	Right Ascension.	Declination.	Mag.	Name.
α	$10^h\ 55^m$	N. 62° 27′	1·2	Dubhe.
β	10 52	57 13	2	Merak.
γ	11 47	54 25	2	Megrez.
δ	12 8	67 54	3	Phegda.
ε	12 47	56 49	3	Alioth.
ζ	13 18	55 45	3	Mirzar.
η	13 42	49 58	2·3	Benetnasch.

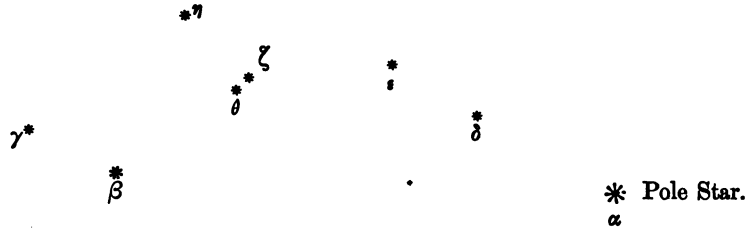
Approximate Transits of α Ursæ Majoris, on the first of each month.

Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
h m	h m	h m	h m	h m	h m	h m	h m	h m	h m	h m	h m
16 6	14 5	12 14	10 12	8 15	6 13	4 16	2 15	0 13	22 11	20 9	18 11

(22.) The Great Bear consists of four fine stars of the second magnitude, and three of the third. Four of the seven stars, viz. α, β, γ, δ, form a great quadrilateral figure, the other three ϵ, ζ, η are placed on the prolongation of one of the diagonals β, δ, and represent the tail of the Bear. This constellation is one of those which, in our latitude (50° N.) never sets, and, as well as the two following, Ursa Minor and Cassiopeia, can always be seen by us in a clear night.

(23.) The Little Bear (Ursa Minor) consists of seven or eight principal stars.

The Little Bear. (Fig. 2.)



Char.	Right Ascension.	Declination.	Mag.	Name.
α	$1^h\ 4^m$	N. 88° 29′	2·3	Rucchabah.
β	14 51	74 48	3	
γ^2	15 21	72 23	3·4	
δ	18 23	86 36	3	
ϵ	17 2	82 17	4	
ζ	15 50	78 16	4	
η	16 22	76 6	5	
θ	15 36	77 46	5	

(24.) This constellation is of much less dimensions than the Great Bear (21), and contains no star above the third magnitude (except perhaps α, which is between the second and third). The quadrilateral is formed by the stars β, γ, ζ, η: the stars ϵ, δ, α form the tail.

(25.) This last-mentioned star α Polaris is the most important one in our hemisphere; for it is the Pole Star, so called because it is near the North Pole of the heavens (its polar distance being about 1° 24′). It thus appears

to be the immovable point about which the celestial concave turns, and the center of the circles described by all the other stars.

RULE 1. *To find the Pole Star (α Polaris).*

(26.) Draw a line from β to α of the Great Bear (fig. 1), and produce it about the length of the whole constellation of the Great Bear;* this line will terminate near the Pole star. As it is one of the most conspicuous stars in that part of the heavens, it will be easily found in this manner. The stars α and β Ursæ Majoris, used for finding the Pole star, are, for this reason, called the *Pointers.*

RULE 2. *To find the place of the North Pole of the Heavens.*

(27.) Draw a line through the Pole star (26) to ε in the Great Bear (21). The pole is on this line, at about $1\frac{1}{2}°$ from the Pole star.

By this rule we can easily discover the position of the Pole star with respect to the north pole of the heavens: for the star will be to the south or north of the pole according as ε Ursæ Majoris is to the north or south of the Pole star. When ε Ursæ Majoris is 6 hours from the meridian (which may be easily found in the transit table, or estimated by the eye), the Pole star is at its greatest distance from the meridian. In this position of the Pole star, its altitude will be nearly that of the pole, or the same as the latitude of the spectator (p. 7).

(28.) CASSIOPEIA consists of six principal stars.

Char.	Right Ascension.	Declination.	Mag.	Name.
α	$0^h\ 33^m$	N. 55° 49′	3	Schedir.
β	0 2	58 17	2·3	
κ	0 24	61 3	4	
γ	0 47	59 50	3	
δ	1 16	59 25	3	
ε	1 43	62 52	4	

* By the length of the whole constellation of the Great Bear we here mean, the distance between the two extreme stars β and η in fig. 1; the constellation itself extends over a space considerably greater than that occupied by the seven bright stars in the figure.

Approximate Transits of α Cassiopeiæ on the first of each month.

Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
h m	h m	h m	h m	h m	h m	h m	h m	h m	h m	h m	h m
5 48	3 47	1 56	23 50	21 52	19 51	17 52	15 51	13 49	11 51	9 48	7 52

Cassiopeia. (Fig. 3.)



(29.) This constellation is on the opposite side of the pole to that of the Great Bear (21), the one bearing east when the other is west. It is placed about the same distance from the pole as the Great Bear, and consists of a group of stars of the third and fourth magnitudes. We can easily recognise it from its resembling a chair; α, β, κ, γ, with many other small stars, forming the seat; the back is represented by the bend γ, δ, ε.

RULE 3. *To find Cassiopeia.*

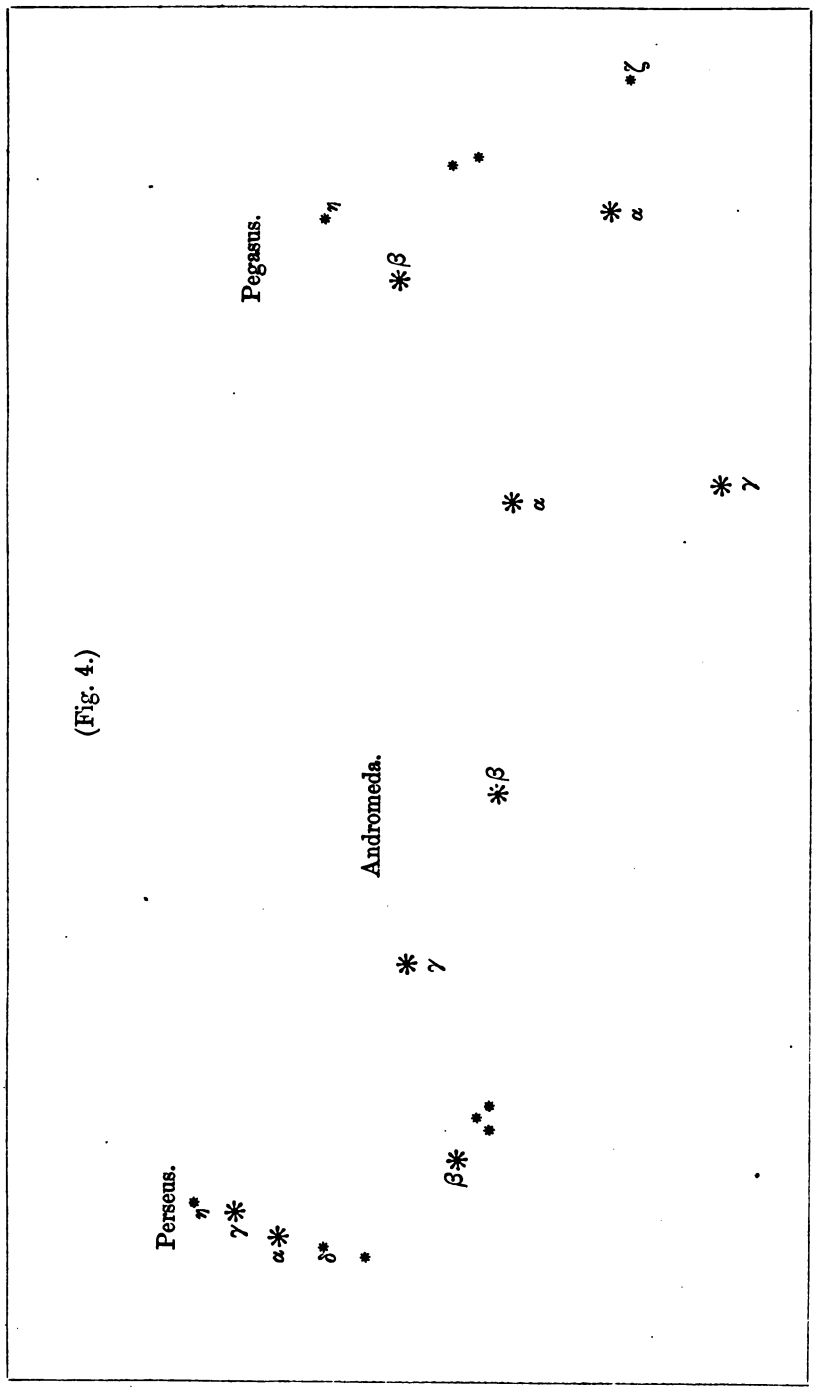
(30.) Draw a line from ε of the Great Bear (21) through the Pole star (26), produce it about the same distance on the other side, and it will pass through this constellation.

RULE 4. *To find β Cassiopeiæ.*

(31.) This star is the westernmost of the group in fig. 3 when above the pole, and therefore is the first that passes the meridian.

(32.) On receding from the pole we come to three constellations, PEGASUS, ANDROMEDA, and PERSEUS, which will be better represented by one large group, as the stars composing them form together a well-known configuration easy to recollect. (See fig. 4, p. 15.)

(33.) PEGASUS, consisting of three principal stars.
ANDROMEDA, „ three „
PERSEUS „ two „



(Fig. 4.)

Character.	Right Ascension.	Declination.	Mag.	Name.
α Pegasi . .	$22^h\ 58^m$	N. 14° 30′	2	Markab.
β Pegasi . .	22 56	27 14	2	Skeat.
ε Pegasi . .	21 37	9 10	2·3	Enif.
γ Pegasi . .	0 5	14 19	2·3	Algenib.
δ Pegasi, or α Andromedæ	0 1	28 22	2·3	Alpheratz.
β Andromedæ.	1 1	34 47	2	Mirach.
γ Andromedæ.	1 54	41 34	3·4	Alamak.
α Persei . .	3 15	49 23	2·3	Mirfack.
β Persei, or β Medusæ	2 58	40 21	2·3	Algol.

Approximate Transits of α Pegasi and α Persei on the first of each month.

Character.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
	h m	h m	h m	h m	h m	h m	h m	h m	h m	h m	h m	h m
α Pegasi	4 12	2 11	0 20	22 14	20 17	18 15	16 17	14 16	12 14	10 16	8 14	6 16
α Persei	8 29	6 27	4 36	2 35	0 37	22 31	20 33	18 31	16 29	14 32	12 29	10 31

Rule 5. *To find Pegasus.*

(34.) A line drawn from the Pole star (26) to Cassiopeia (28), and produced about the same distance, will terminate near the four stars forming the "great square of Pegasus."

(35.) This constellation is in the form of a great square, α, β, α, γ, near which two stars of the third magnitude, η, ζ of Pegasus, are in a line parallel to the side α, β, and serve to distinguish it. The square of Pegasus and that of the Great Bear are on opposite sides of the pole, and therefore pass the meridian about 12 hours after each other.

Rule 6. *To find Andromeda.*

(36.) If the diagonal α α of the square of Pegasus be produced to the eastward, it will determine the position of the three principal stars in Andromeda α, β, γ: the first of which, α, is, in fact, one of the stars forming the square of Pegasus: it is sometimes considered as belonging to the latter constellation, and it is then called δ Pegasi.

RULE 7. *To find Perseus.*

(37.) The above line being farther produced, will pass near the principal star in Perseus, α Persei, of the second magnitude, situated in the middle of an arc formed by the stars δ, α, γ, η of Perseus.

(38.) The preceding description will perhaps be sufficient, with the assistance of the diagram, to enable the observer to discover the position of the principal stars in these constellations; but for the sake of reference we will here give distinct rules for that purpose.

RULE 8. *To find α Pegasi.*

(39.) This star is at the western angle of the square (fig. 4), and therefore passes the meridian the first of the four.

RULE 9. *To find β, ε, and γ Pegasi.*

(40.) β is at the northern and γ at the opposite angle of the square. ε Pegasi, a small star of the second magnitude, can be found by drawing a line from β to α Andromedæ (fig. p. 15), and producing it about the same distance on the other side of the square of Pegasus.

RULE 10. *To find α Andromedæ, or δ Pegasi.*

(41.) This star is at the eastern angle of the square, and therefore opposite to α Pegasi (39).

RULE 11. *To find β Andromedæ.*

(42.) The line drawn from α Pegasi (39) to α Andromedæ (41) being produced about the same distance will terminate near β Andromedæ.

RULE 12. *To find γ Andromedæ.*

(43.) The above line continued nearly the same distance beyond β Andromedæ (41) will determine the position of γ Andromedæ.

RULE 13. *To find α Persei.*

(44.) The long line thus drawn through the above stars being continued beyond γ Andromedæ, about the distance that β is from γ Andromedæ, but curved a little to the north, will terminate near α Persei, the central star of a row formed like a bow or arc; hence called "the arc of Perseus."

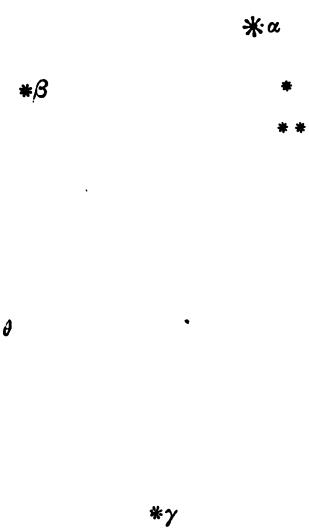
RULE 14. *To find β Persei, or β Medusæ.*

(45.) β Persei is one of a group of stars to the south-west of α Persei (39), and to the south-east of γ Andromedæ (43). It is a *variable* star, changing in 2 days 20 hours 50 minutes from the second or third to the fifth magnitude. It is placed in the head of the constellation Medusa.

(46.) We thus see seven stars of the second magnitude having some resemblance in form to the corresponding seven of the Great Bear, but on a much larger scale: the tail being represented by β, γ Andromedæ and α Persei.

(47.) THE CHARIOTEER (Auriga), containing five principal stars.

The Charioteer. (Fig. 5.)



Char.	Right Ascension.	Declination.	Mag.	Name.
α	5h 7m	N. 45° 51′	1	Capella.
β	5 48	44 55	2	
θ	5 49	37 12	4	
ι	4 46	32 55	4	
γ Aurigæ or β Tauri.	5 16	28 28	2	Nath.

Approximate Transits of Capella on the first of each month.

Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
h m	h m	h m	h m	h m	h m	h m	h m	h m	h m	h m	h m
10 20	8 19	6 28	4 26	2 29	0 27	22 24	20 23	18 21	16 23	14 21	12 23

(48.) The stars α, β, θ, γ, ι Aurigæ form a great irregular pentagon. The star α Aurigæ is also called Capella: it is one of the most brilliant in the heavens. At certain times, in our latitude, it approaches the northern horizon; 12 hours afterwards it passes near the zenith. A little below it is a long isosceles triangle, formed of the three stars ε, η, ζ of the fourth magnitude, which serves to distinguish Capella from all the other stars of the first magnitude. The star marked γ in fig. p. 18, is also in the constellation of Taurus, the Bull (84) (the horn touching the foot of Auriga); it is, therefore, sometimes considered as belonging to the constellation of the Bull, and called β Tauri.

RULE 15. *To find Capella* (α Aurigæ) *and the Pleiades.*

(49.) From the bow of Perseus proceed two rows of small stars curved in opposite directions: one bends towards the east, and extends to Capella; the other, towards the south, and is directed towards the well-known group of stars called the Pleiades.

RULE 16. *To find β Aurigæ.*

(50.) β Aurigæ is that star of the pentagon which is nearest to Capella.

RULE 17. *To find γ Aurigæ or β Tauri.*

(51.) β Tauri or γ Aurigæ is the southern star of the pentagon. This star is at the extremity of the horn of the Bull (84) which touches the foot of Auriga. When considered as belonging to the latter constellation, it is distinguished as γ Aurigæ.

(52.) THE SWAN (Cygnus), containing five principal stars.

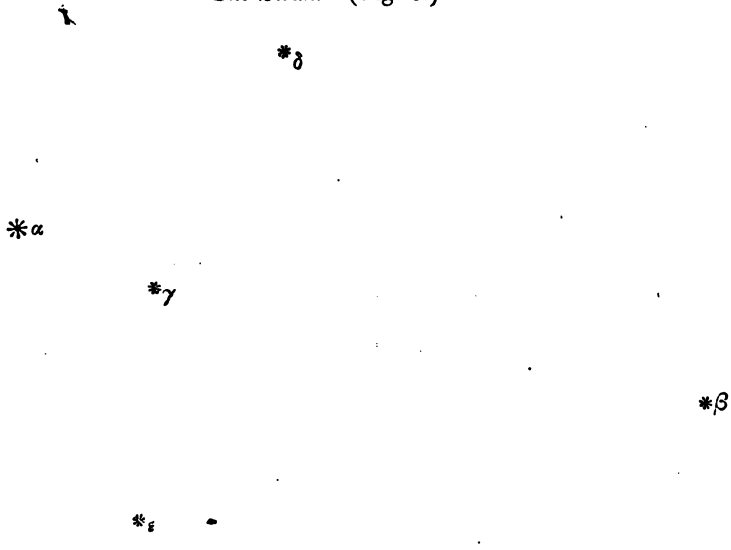
Char.	Right Ascension.	Declination.	Mag.	Name.
α	$20^h\ 37^m$	N. 44° 49′	2	Denebadige.
β'	19 24	27 38	3	
γ	20 17	39 46	3	
δ	19 40	44 45	3·4	
ε	20 40	33 24	3	
61	21 0	37 59	5·6	

Approximate Transits of α Cygni on the first of each month.

Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
h m	h m	h m	h m	h m	h m	h m	h m	h m	h m	h m	h m
1 53	23 47	21 57	19 55	17 57	15 56	13 57	11 55	9 54	7 56	5 53	3 56

(53.) The constellation Cygnus forms a large cross of five stars of the second and third magnitude. β Cygni is placed in the head of the Swan, α Cygni in the tail; the latter is of the second magnitude.

The Swan. (Fig. 6.)



RULE 18. *To find α Cygni* (Denebadige).

(54.) Produce the line joining γ β of Pegasus (fig. p. 15) towards the north, about twice its length, and it will terminate near α Cygni.

(55.) BOOTES, containing one principal star.

Char.	Right Ascension.	Declination.	Mag.	Name.
α	$14^h\ 9^m$	N. 20° 0′	1	Arcturus.

Approximate Transits of Arcturus on the first of each month.

Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
h m	h m	h m	h m	h m	h m	h m	h m	h m	h m	h m	h m
19 23	17 21	15 31	13 29	11 31	9 30	7 31	5 29	3 28	1 30	23 23	21 26

(56.) The principal star in this constellation is Arcturus.

RULE 19. *To find Arcturus* (α Bootis).

(57.) Continue the curved tail of the Great Bear (21) about twice the length of the constellation, and it will terminate near the fine star Arcturus.

(58.) THE HARP (Lyra), containing one principal star.

Char.	Right Ascension.	Declination.	Mag.	Name.
α	$18^h\ 32^m$	N. 38° 38′	1	Vega.

Approximate Transits of α Lyræ on the first of each month.

Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
h m	h m	h m	h m	h m	h m	h m	h m	h m	h m	h m	h m
23 45	21 44	19 53	17 51	15 53	13 52	11 53	9 52	7 50	5 52	3 50	1 52

(59.) Vega, or α Lyræ, is a fine star of the first magnitude.

RULE 20. *To find Vega* (α Lyræ).

(60.) Draw a line from Capella (49) through the Pole star (26), and continue it somewhat more than an equal distance on the opposite side of the pole, and it will point out α Lyræ.

(61.) THE EAGLE (Aquila), containing three principal stars.

The Eagle. (Fig. 7.)

$*\gamma$

$*\alpha$

$*\beta$

Char.	Right Ascension.	Declination.	Mag.	Name.
β	19h 49m	N. 6° 5′	3·4	
α	19 44	8 31	1·2	Altair.
γ	19 40	10 18	3	

(62.) This constellation is to the southward of Lyra (60). We see three stars close to one another in the same straight line. These are α, β, and γ Aquilæ.

Approximate Transits of α Aquilæ on the first of each month.

Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
h m	h m	h m	h m	h m	h m	h m	h m	h m	h m	h m	h m
1 0	22 54	21 4	19 2	17 4	15 3	13 4	11 2	9 1	7 3	5 0	3 3

RULE 21. *To find α, β, and γ Aquilæ.*

(63.) Draw a line from the Pole star (26) between α Lyræ (60) and α Cygni (54); produce it an equal distance beyond them, and it will terminate near the three stars α, β, and γ Aquilæ; the middle of which is α Aquilæ, the southernmost β, and the northernmost is γ Aquilæ.

(64.) THE DRAGON (Draco), containing three principal stars.

Char.	Right Ascension.	Declination.	Mag.	Name.
α	14h 0m	N. 65° 7′	3	
β	17 27	52 24	2	
γ	17 53	51 31	2	

Approximate Transits of α and γ Draconis on the first of each month.

Char.	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
	h m	h m	h m	h m	h m	h m	h m	h m	h m	h m	h m	h m
α	19 14	17 12	15 22	13 20	11 22	9 21	7 22	5 20	3 19	1 21	23 14	21 17
γ	23 6	21 5	19 14	17 12	15 15	13 13	11 14	9 13	7 10	5 13	3 11	1 13

(65.) This constellation is of considerable extent, and one of those which never sets in our latitude: one part of this constellation winds round the north pole of the ecliptic.

RULE 22. *To find α Draconis.*

(66.) A line drawn from ζ Ursæ Majoris (the last star but one in the tail of the Great Bear) to the nearest star in the Little Bear will be bisected by α Draconis. Or thus, a line from γ to δ Ursæ Majoris, and produced nearly three times their distance, will give the position of α Draconis.

RULE 23. *To find β and γ Draconis.*

(67.) Draw a line from α Lyræ (60) to α Ursæ Majoris (fig. p. 11), and at one-fourth the length of this line from α Lyræ, and a little to the north of the line, is a cluster of stars forming the head of the Dragon, the two largest of which are β and γ; the one nearest to α Lyræ is γ Draconis, the other is β.

RULE 24. *To find the position of the North Pole of the Ecliptic.*

(68.) A line drawn from γ Draconis (67) northward, and continued about the same distance that γ Draconis is from α Lyræ (60), will terminate near the pole of the ecliptic.

(69.) THE NORTHERN CROWN (Corona Borealis), containing one principal star.

Char.	Right Ascension.	Declination.	Mag.	Name.
α	$15^h\ 29^m$	N. 27° 9′	2	Gemma.

Approximate Transits of α Coronæ Borealis on the first of each month.

Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
h m	h m	h m	h m	h m	h m	h m	h m	h m	h m	h m	h m
20 42	18 40	16 49	14 48	12 50	10 48	8 50	6 48	4 46	2 49	0 46	22 44

(70.) The Northern Crown is situated between α Lyræ (60) and Arcturus (57). It is composed of six or seven stars, forming a remarkable semicircle easy to distinguish, the principal of which is a fine star of the second magnitude called Gemma (α Coronæ Borealis).

RULE 25. *To find α Coronæ Borealis.*

(71.) A line from Arcturus (57) to Lyra (60) will pass near this star, which is situated about one-third the length of this line from Arcturus.

(72.) THE SERPENT (Serpens), containing one principal star.

Char.	Right Ascension.	Declination.	Mag.	Name.
α	$15^h\ 38^m$	N. 6° 50′	2·3	

Approximate Transits of α Serpentis on the first of each month.

Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
h m	h m	h m	h m	h m	h m	h m	h m	h m	h m	h m	h m
20 51	18 49	16 58	14 57	12 59	10 57	8 59	6 57	4 55	2 58	0 55	22 53

(73.) The only remarkable star in this constellation is α, of the second magnitude.

RULE 26. *To find α Serpentis.*

(74.) A line drawn due south from α Coronæ Borealis (69), and continued about the same distance as this star is from Arcturus (57), will terminate near α Serpentis.

(75.) CANES VENATICI (the Hunting-dogs), containing one principal star.

Char.	Right Ascension.	Declination.	Mag.	Name.
12	$12^h\ 50^m$	N. 39° 1′	2·3	Cor Caroli

Approximate Transits of Cor Caroli on the first of each month.

Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
h m	h m	h m	h m	h m	h m	h m	h m	h m	h m	h m	h m
18 3	16 1	14 11	12 9	10 11	8 10	6 11	4 9	2 8	0 10	22 3	20 6

RULE 27. *To find Cor Caroli* (12 Can. Ven.).

(76.) A line from α Ursæ Majoris (fig. p. 11) through the opposite star in the square of Ursa Major, and produced to nearly twice their distance, will point out 12 Canum Venaticorum, or Cor Caroli (Charles's Heart).

(77.) OPHIUCHUS and HERCULES, containing two principal stars.

Character.	Right Ascension.	Declination.	Mag.	Name.
α Ophiuchi.	$17^h\ 29^m$	N. 12° 39′	2	
α Herculis.	17 9	14 32	3·4	

Approximate Transits of α Ophiuchi on the first of each month.

Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
h m	h m	h m	h m	h m	h m	h m	h m	h m	h m	h m	h m
22 41	20 40	18 49	16 47	14 50	12 48	10 49	8 48	6 46	4 48	2 46	0 48

(78.) The stars α Ophiuchi and α Herculis are placed in the heads of Ophiuchus and Hercules; they are near each other, being about the same distance as the pointers in the Great Bear (26); α Ophiuchi is a little to the left of, and below, α Herculis.

RULE 28. *To find α Ophiuchi, and α Herculis.*

(79.) A line drawn from Cor Caroli through the Northern Crown (70), and produced about the same distance, will terminate near these two stars: α Ophiuchi being the nearer of the two to Cor Caroli.

(80.) The times of the transits for the 1st of each month, given in the preceding pages, are the times when the star passes the meridian *above* the pole, or from east to west. These transits of the principal stars will enable the observer to select the most suitable constellation to observe and learn during the month. Thus, during the months of November, December, and January the constellations Pegasus, Andromeda, and Perseus (Rules 5–14), will be best seen, since by the transit-table α Pegasi and α Persei will be on the meridian at a convenient hour in the evening—namely, between 8 and 12 —in those months.

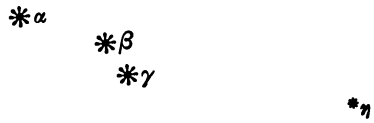
The page at the end of the book, containing the "Positions of the principal Constellations for the 1st of each Month," will also point out to the observer the stars above his horizon between the hours of 9 and 12 o'clock, and he will thus see what part of the book he should study during that month.

CHAPTER III.

THE PRINCIPAL STARS IN THE CONSTELLATIONS OF THE ZODIAC.

(81.) THE RAM (Aries), containing three principal stars.

The Ram. (Fig. 8.)



Character.	Right Ascension.	Declination.	Mag.	Name.
α Arietis.	2h 0m	N. 22° 50′	3	Hamel.
β . .	1 46	20 9	3	Sheratan.
γ . .	1 45	18 31	4	Mesarthim.
η Piscium.	1 23	14 32	4	

Approximate Transits of α Arietis on the first of each month.

Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
h m	h m	h m	h m	h m	h m	h m	h m	h m	h m	h m	h m
7 14	5 12	3 22	1 20	23 18	21 17	19 18	17 16	15 15	13 17	11 14	9 17

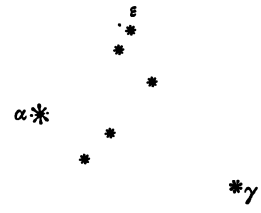
RULE 29. *To find α, β, and γ Arietis.*

(82.) A line from α Persei (39) (or rather from the small star to the south of it), through β Persei (45), and produced to twice their distance, will point out α Arietis.

(83.) α and β Arietis are in the head of the Ram; β is to the left of α; farther to the left of, and below, β is γ Arietis, of the fourth magnitude. The other small star η in the above diagram belongs to, and is the principal one in, the sign of Pisces, or the Fishes.

(84.) THE BULL (Taurus), containing two principal stars.

The Bull. (Fig. 9.)



Character.	Right Ascension.	Declination.	Mag.	Name.
α	4^h 28^m	N. 16° 14′	1	Aldebaran.
β	5 18	28 29	2	Nath.

Approximate Transits of Aldebaran (α Tauri) on the first of each month.

Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
h m	h m	h m	h m	h m	h m	h m	h m	h m	h m	h m	h m
9 41	7 39	5 49	3 47	1 49	23 48	21 49	19 47	17 46	15 48	13 41	11 44

(85.) THE PLEIADES, a beautiful cluster of stars, is situated in this constellation. To the left of the Pleiades is another cluster called the Hyades, consisting of seven small stars, in the form of the letter V. Aldebaran is placed among them on the left, or at the top of the letter: the corresponding star at the other extremity of the letter is η Tauri; the one at the angular point is γ; β Tauri has already been described (51), being the southernmost angle of the pentagon of Auriga (see fig. 5). Aldebaran is distinguished from most of the other stars by its ruddy appearance.

RULE 30. *To find Aldebaran* (α Tauri).

(86.) A line drawn from the Pole star between Capella and α Persei will pass through no great star till it comes to Aldebaran.

To find β Tauri. See Rule 17.

(87.) The Twins (Gemini), containing three principal stars.

The Twins. (Fig. 10.)



Character.	Right Ascension.	Declination.	Mag.	Name.
α^2	$7^h\ 26^m$	N. 32° 10′	1·2	Castor.
β	7 37	28 20	2	Pollux.
γ	6 30	16 30	3	

Approximate Transits of Castor (α^2 Geminorum) on the first of each month.

Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
h m	h m	h m	h m	h m	h m	h m	h m	h m	h m	h m	h m
12 40	10 38	8 48	6 46	4 48	2 47	0 48	22 42	20 43	18 43	16 40	14 43

(88.) To the east of Aldebaran, about the distance of Aldebaran from Capella, there are four stars in a line, one of which, γ Germinorum, is of the second or third magnitude: these stars are in the feet of the Twins. In their heads are two fine stars, α^2 and β; α^2 or Castor is the northernmost, and to the right of β Geminorum or Pollux.

Rule 31. *To find Castor and Pollux* (α and β Geminorum).

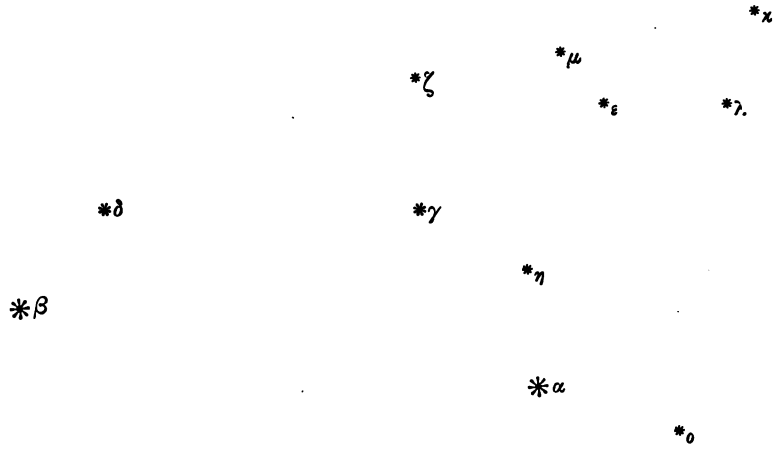
(89.) Castor and Aldebaran form with Capella (49) an isosceles triangle,

of which the two former are at the base, and Capella at the vertex. Castor is to the east of Aldebaran, Pollux a little to the south of Castor.

(90.) THE CRAB (Cancer). This constellation contains no star above the fourth magnitude.

(91.) THE LION (Leo), containing four principal stars.

The Lion. (Fig. 11.)



Character.	Right Ascension.	Declination.	Mag.	Name.
α	10h 1m	N. 12° 36′	1	Regulus.
β	11 42	15 18	2·3	Denebola.
γ	10 13	20 30	2	
δ	11 7	21 14	3	

Approximate Transits of Regulus (α Leonis) on the first of each month.

Jan.		Feb.		Mar.		April.		May.		June.		July.		Aug.		Sept.		Oct.		Nov.		Dec.	
h	m	h	m	h	m	h	m	h	m	h	m	h	m	h	m	h	m	h	m	h	m	h	m
15	15	13	13	11	22	9	21	7	23	5	21	3	23	1	21	23	15	21	18	19	15	17	17

(92.) The four principal stars α β γ δ are in the form of a quadrilateral. They are situated below the Great Bear on the side opposite to the Pole star: the lower side of the trapezium contains α of the first magnitude in the Lion's Heart (Regulus), and β in the tail (Denebola); the side γ α is the base of a right-angled triangle ε α γ, above which is another trapezium ε μ ϰ λ of much smaller dimensions than the other: this latter trapezium forms the head of the Lion.

RULE 32. *To find Regulus and Denebola* (α and β Leonis).

(93.) A line drawn from α to β Ursæ Majoris (fig. p. 11),—the stars which point out the Pole star in the opposite direction (Rule 26), and produced about twice the length of Ursa Major, will pass near Regulus and also γ Leonis, which is a little to the north of Regulus. To find Denebola, or β Leonis, draw a line from η Ursæ Majoris (the last star in the tail of the Great Bear) through Cor Caroli (Art. 76), and produce it about twice the distance of η Ursæ Majoris from Cor Caroli, and it will terminate near β Leonis.

(94.) THE VIRGIN (Virgo), containing one principal star.

Character.	Right Ascension.	Declination.	Mag.	Name.
α	$13^h\ 17^m$	S. 10° 21′	1	Spica.

Approximate Transits of α Virginis on the first of each month.

Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
h m	h m	h m	h m	h m	h m	h m	h m	h m	h m	h m	h m
18 21	16 19	14 29	12 27	10 29	8 28	6 29	4 27	2 26	0 28	22 24	20 24

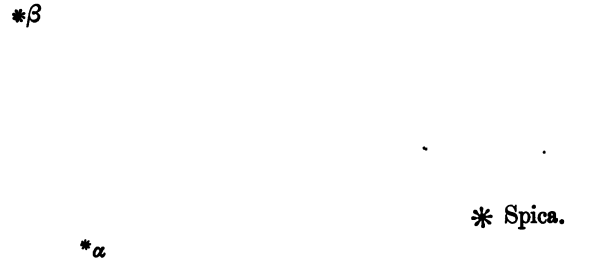
(95.) This fine star, Spica, is to the south of, and forms with Arcturus (57) and β Leonis (93) an equilateral triangle.

RULE 33. *To find Spica* (α Virginis).

(96.) A line from ε Ursæ Majoris (fig. 1, p. 11) through Cor Caroli (76), and produced about the same distance, will terminate near this star: or it may be found as in the last Rule, by considering it placed at the southern angle of an equilateral triangle, of which Arcturus and Denebola (β Leonis) are at the northern angles.

(97.) THE BALANCE (Libra), containing two principal stars.

The Balance. (Fig. 12.)



Character.	Right Ascension.	Declination.	Mag.	Name.
α^2	$14^h\ 44^m$	S. 15° 30′	2·3	Zubenesch.
β	15 10	8 54	2	Zubenelg.

Approximate Transits of α^2 Libræ on the first of each month.

Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
h m	h m	h m	h m	h m	h m	h m	h m	h m	h m	h m	h m
19 56	17 54	16 3	14 2	12 4	10 2	8 4	6 2	4 0	2 3	0 0	21 58

(98.) To the east of Spica (α Virginis) we see two stars of the second magnitude, α and β Libræ (fig. 12); β, the most distant from Spica, is nearly as far from it as Spica is from Arcturus.

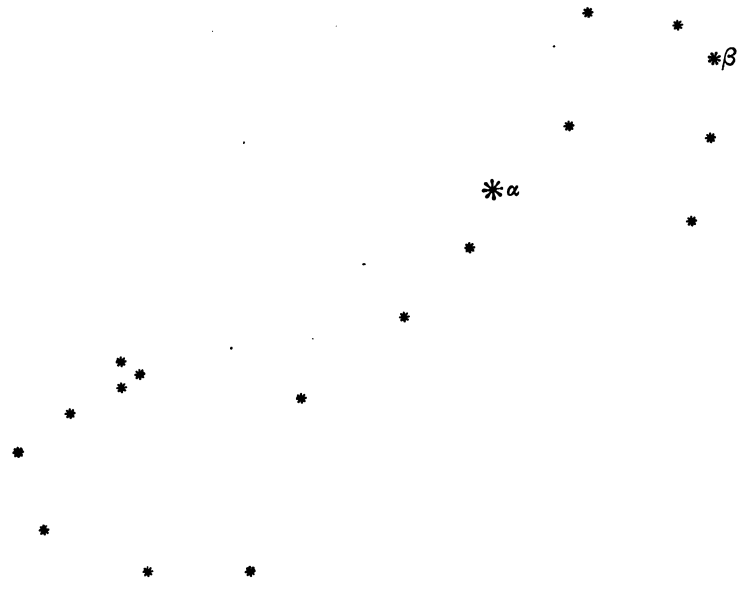
RULE 34. *To find α^2 and β Librœ.*

(99.) The above rule may perhaps be sufficient. They may also be found by supposing a line drawn from α Lyræ (60) passing a little to the west of α Herculis (79), and produced about the same distance beyond α Herculis as this latter star is from α Lyræ.

(100.) THE SCORPION (Scorpius), containing two principal stars.

Character.	Right Ascension.	Declination.	Mag.	Name.
α	$16^h\ 20^m$	S. 26° 5′	1	Antares.
β	15 56	19 22	2	

The Scorpion. (Fig. 13.)



Approximate Transits of Antares on the first of each month.

Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
h m	h m	h m	h m	h m	h m	h m	h m	h m	h m	h m	h m
21 34	19 32	17 41	15 40	13 42	11 40	9 42	7 40	5 38	3 41	1 38	23 36

(101.) This fine constellation is to the south-east of Libra (97). The head of the Scorpion is represented by an arc of five small stars, among which is placed β of the second magnitude. Antares (α Scorpii) is to the south-east of β Scorpii, in the body of the Scorpion. The curved tail of the Scorpion is composed of stars of the third and fourth magnitude, extending southward beyond the zodiac.

RULE 35. *To find α and β Scorpii.*

(102.) A line from α Virginis (96) through α Libræ (99), and continued about the same distance, will pass a little to the north of α Scorpii (Antares); or it may be found by considering it as forming with α Lyræ (60) and Arcturus (57) an equilateral triangle, of which Arcturus is at the northern or

vertical angle. β Scorpii is to the north-west of Antares, in the curved line of stars which forms the head of the Scorpion.

(103.) The other signs of the zodiac, namely, Sagittarius, Capricornus, Aquarius, and Pisces, contain no stars above the third magnitude; it will not therefore be necessary to lay down in this place any formal rules for finding them: a general method will be given hereafter (p. 44) for finding stars below the second magnitude.

CHAPTER IV.

THE PRINCIPAL STARS IN THE CONSTELLATIONS SOUTH OF THE ZODIAC.

(104.) THE WHALE (Cetus), containing two principal stars.

Character.	Right Ascension.	Declination.	Mag.	Name.
α	$2^h\ 55^m$	N. 3° 34′	2·3	Menkar.
β	0 37	S. 18 42	2·3	

Approximate Transits of α Ceti on the first of each month.

Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
h m	h m	h m	h m	h m	h m	h m	h m	h m	h m	h m	h m
8 10	6 8	4 17	2 16	0 18	22 12	20 14	18 12	16 10	14 13	12 10	10 12

(105.) This constellation is to the south of Aries (82). It contains several groups of four or five small stars in the form of parallelograms. α Ceti is placed in the head of the whale, and β in the tail.

RULE 36. *To find α Ceti* (Menkar).

(106.) A line from β Andromedæ (42) through α Arietis (83), and continued a little more than the same distance, will terminate near α Ceti.

RULE 37. *To find β Ceti.*

(107.) A line from α Tauri (Aldebaran) (86) through α Ceti will pass near four stars in the body of the whale, γ, δ, o, ζ, and continued a little more than the distance that α Ceti is from Aldebaran, will terminate near β Ceti.

(108.) THE SOUTHERN FISH (Pisces Australis), containing one principal star.

Character.	Right Ascension.	Declination.	Mag.	Name.
α	$22^h\ 50^m$	S. 30° 19′	1	Fomalhaut.

Approximate Transits of Fomalhaut on the First of each Month.

Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
h m	h m	h m	h m	h m	h m	h m	h m	h m	h m	h m	h m
4 5	2 4	0 13	22 7	20 10	18 8	16 9	14 8	12 6	10 8	8 6	6 8

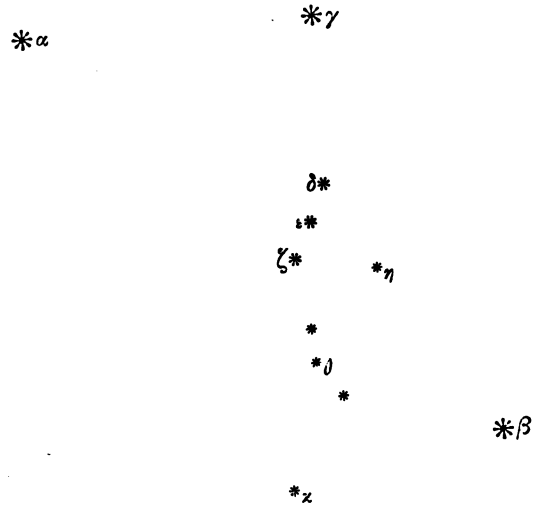
(109.) Below the sign Aquarius, and near our southern horizon (Lat. 50° N.), is the fine star Fomalhaut, of the first magnitude.

RULE 38. *To find Fomalhaut* (α Piscis Australis).

(110.) A line drawn from β to α Pegasi (39, 40), the stars forming the western side of the great square of Pegasus (fig. 4), and produced about three times the distance, will pass through Fomalhaut.

(111.) ORION, containing seven principal stars.

Orion. (Fig. 14.)



Character.	Right Ascension.	Declination.	Mag.	Name.
α	$5^h\ 48^m$	N. 7° 22′	1	Betelguese.
β	5 8	S. 8 23	1	Rigel.
γ	5 17	N. 6 12	2	Bellatrix.
$\varkappa$	5 40	S. 9 44	3	
ζ	5 33	2 2	3	
ε	5 29	1 17	2·3	
δ	5 24	0 25	2	

Approximate Transits of Rigel (β Orionis) on the first of each month.

Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
h m	h m	h m	h m	h m	h m	h m	h m	h m	h m	h m	h m
11 2	9 1	7 10	5 8	3 11	1 9	23 6	21 5	19 3	17 5	15 3	13 5

(112.) This splendid constellation is to the south of Auriga and Taurus. It is the finest of all the constellations, both on account of its extent and the number of brilliant stars of which it is composed. α, β, γ, $\varkappa$ are in the form of a great quadrilateral: α, at the north-east angle, is in the right shoulder of Orion; β, at the opposite angle, is in the left foot; γ is in the left shoulder; and $\varkappa$ is in the right leg. In the middle of the quadrilateral are three stars of the second magnitude, δ, ε, ζ, disposed in an oblique line. These form the belt of Orion. Below this belt is a luminous train of small stars in the sword, the largest of which is θ.

RULE 39. *To find α and $\varkappa$ Orionis.*

(113.) Betelguese, or α Orionis, and $\varkappa$ Orionis, form the left or western side of the great quadrilateral; α being the northernmost.

RULE 40. *To find β and γ Orionis* (Rigel and Bellatrix).

(114.) β and γ Orionis form the right side of the great quadrilateral; β being the southernmost.

RULE 41. *To find δ, ε, ζ Orionis.*

(115.) ε Orionis is the middle of the three forming the belt; δ is the northernmost, or to the right; and the southernmost is ζ.

(116.) Orion is situated in that part of the heavens in which we discover

the greatest number of fine stars. In the months of February and March, about 9 or 10 o'clock in the evening, we may (in lat. 50° N.) see at one time not less than a dozen stars of the first magnitude, viz. Capella, Aldebaran, Arcturus, Spica, Orion, the Twins, the Lion, and the three about to be described, viz. Sirius, Procyon, and α Hydræ; besides a great number of stars of the second magnitude.

(117.) The Great Dog (Canis Major), containing five principal stars, among which is Sirius, the brightest of the fixed stars.

Character.	Right Ascension.	Declination.	Mag.	Name.
α	$6^h\ 39^m$	S. 16° 32′	1	Sirius.
β	7 19	8 36	3	
δ	7 2	26 9	3·4	
ε	6 53	28 46	2·3	
η	7 18	29 0	3	

Approximate Transits of Sirius on the first of each month.

Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
h m	h m	h m	h m	h m	h m	h m	h m	h m	h m	h m	h m
11 53	9 51	8 1	6 0	4 1	2 0	0 1	21 55	19 53	17 56	15 53	13 56

Rule 42. *To find Sirius* (α Canis Majoris).

(118.) Produce a line through the belt of Orion towards the left or south-east, about the same distance as the two principal stars (α, β) of Orion, and it will terminate near Sirius.

(119.) The Little Dog (Canis Minor), containing one principal star.

Character.	Right Ascension.	Declination.	Mag.	Name.
α	$7^h\ 32^m$	N. 5° 33′	1·2	Procyon.

Approximate Transits of Procyon on the first of each month.

Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
h m	h m	h m	h m	h m	h m	h m	h m	h m	h m	h m	h m
12 46	10 44	8 54	6 52	4 54	2 53	0 54	22 48	20 47	18 49	16 46	14 48

(120.) This constellation is below, or to the south of, the Twins (87), and to the east of α Orionis (113), the star at the northern angle of the quadrilateral.

RULE 43. *To find Procyon* (α Canis Minoris).

(121.) It is situated nearly midway between the Twins and Sirius; it may also be found by considering it as forming the eastern angle of an equilateral triangle, Sirius and α Orionis being at the other angles.

(122.) THE HYDRA, containing one principal star.

Character.	Right Ascension.	Declination.	Mag.	Name.
α	$9^h\ 20^m$	S. 7° 59′	1·2	Alphard.

Approximate Transits of α Hydræ on the first of each month.

Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
h m	h m	h m	h m	h m	h m	h m	h m	h m	h m	h m	h m
14 35	12 33	10 42	8 41	6 41	4 41	2 43	0 41	22 35	20 38	18 35	16 37

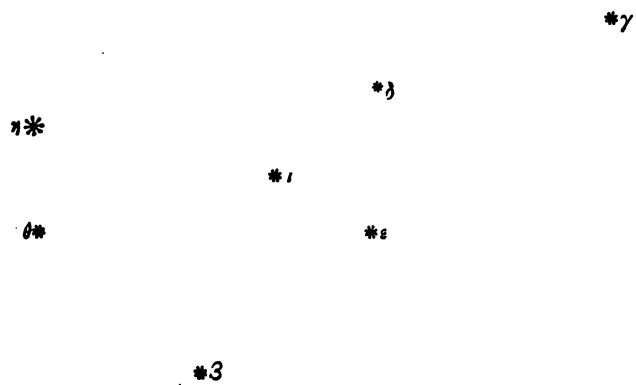
(123.) The Hydra is a constellation of considerable length, extending below the three signs, Cancer, Leo, and Virgo: α Hydræ is in the Hydra's heart.

RULE 44. *To find α Hydræ.*

(124.) Draw a line from γ to α Leonis (Regulus) (93), the stars forming the western side of the parallelogram of Leo, and produce it about twice that distance, and it will terminate near α Hydræ, a star between the first and second magnitude.

(125.) THE SHIP ARGO (Argo Navis), containing nine principal stars.

The Ship. (Fig. 15.)



Character.	Right Ascension.	Declination.	Mag.	Name.
α	$6^h\ 21^m$	S. 52° 37′	1	Canopus.
β	9 11	69 0	2	
γ^2	8 5	46 48	2	
δ	8 40	54 3	3	
ε	8 19	59 1	2	
ζ	7 58	39 29	3	
η	10 40	59 0	2	
θ^2	10 37	63 27	2·3	
ι	9 14	58 43	2	

Approximate Transits of Canopus and η Argus on the first of each month.

Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
h m	h m	h m	h m	h m	h m	h m	h m	h m	h m	h m	h m
11 36	9 35	7 44	5 42	3 45	1 43	23 40	21 39	19 37	17 39	15 37	13 39
15 54	13 52	12 1	10 0	8 1	6 0	4 1	2 0	23 54	21 56	19 54	17 56

(126.) This splendid constellation is to the south-east of Canis Major. It contains Canopus, the brightest of all the stars after Sirius.

RULE 45. *To find Canopus* (α Argus).

(127.) A line from Rigel (114) through α Columbæ (140), and produced about half the same distance, will terminate near Canopus.

RULE 46. *To find* β *Argus.*

(128.) β Argus lies nearly midway between Canopus and α Crucis (135), the brightest star in the Cross.

RULE 47. *To find* θ, ι, δ, γ, *and* ζ *Argus.*

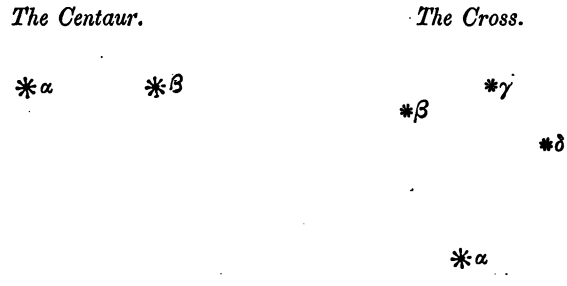
(129.) These five stars are to the east of β Argus, and nearly in a straight line; θ being the southernmost. To find ϵ Argus. This star is between β and γ Argus.

RULE 48. *To find* η *Argus.*

(130.) This remarkable star forms nearly an equilateral triangle with β and ι Argus. It changed from the second to the first magnitude; it now appears to be again diminishing in apparent magnitude.*

(131.) THE CENTAUR and the CROSS (Centaurus et Crux), containing seven principal stars.

(Fig. 16.)



* The Rev. W. S. Mackay, in a letter addressed to Sir John Herschel, dated Calcutta, June 10th, 1843, remarks with respect to this star, that "in March last it had become a star of the first magnitude, fully as bright as Canopus, and in colour and size very much like Arcturus. This has been observed by several other persons to whom I pointed it out. Is the star known as a variable star, or is the change now first observed? α Crucis looked quite dim beside it." With respect to the variability of η Argus, Sir John Herschel remarks as follows: "The sudden increase of η Argus from a star intermediate between the first and second magnitude to a first-rate magnitude, which took place between 1837 and 1838, was mentioned by me in a letter to Messrs. Beer and Madler, of which an extract is in No. 354 of Schumacher's *Astronomische Nachrichten.* It was then *far inferior* to Canopus, but equal to Arcturus, and very nearly or quite so to α Centauri. It had diminished materially when I left the Cape in April 1838, but was still a great star of the first magnitude. It would appear to be now making another start forward. If this continue, we may have a rival to Sirius, or perhaps to the planets. In 1838 its brightness was such as to obliterate many

Character.	Right Ascension.	Declination.	Mag.	Name.
α^1 Crucis.	$12^h\ 19^m$	S. 62° 22′	1	
β Crucis.	12 39	58 43	2	
γ Crucis.	12 23	56 6	2·3	
δ Crucis.	12 7	57 44	3	
β Centauri.	13 55	59 44	1	
α^2 Centauri.	14 31	60 17	1	
θ Centauri.	13 58	35 56	2	

(132.) These fine constellations of the Centaur and Cross are to the south of Virgo and Libra: they are close together, forming one of the most remarkable groups in the southern hemisphere. They could be easily distinguished without any formal rule.

Approximate Transits of α^1 Crucis and α^2 Centauri on the first of each month.

Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
h m	h m	h m	h m	h m	h m	h m	h m	h m	h m	h m	h m
17 32	18 32	13 40	11 38	9 41	7 39	5 40	3 39	1 37	23 35	21 33	19 35
19 43	17 41	15 51	13 49	11 51	9 50	7 51	5 49	3 48	1 50	23 43	21 46

RULE 49. *To find θ Centauri.*

(133.) This star is due south of α Libræ (99): it is the southern angle of a right-angled triangle, of which Spica Virginis (96) and α Libræ are the base: α Libræ is about the same distance from it as from Spica. It appears for a few minutes only above our horizon (in lat. 50° N.). It is best seen in the months of May and June (see Transit Table).

RULE 50. *To find α and β Centauri.*

(134.) The two easternmost in the group (fig. 16) are α and β Centauri: the latter being the nearer of the two to the Cross.

RULE 51. *To find α, β, γ, and δ Crucis.*

(135.) The southernmost star in the Cross is α: the northernmost is γ: β is the nearest to the two bright stars in the Centaur, the remaining one is δ.

curious and interesting details of the great nebula in its immediate proximity, which I had fortunately recorded in its former state."—*Extracted from Astronomical Society's Paper, Nov.* 1843.

(136.) ERIDANUS, containing one principal star.

Character.	Right Ascension.	Declination.	Mag.	Name.
α	$1^h\ 32^m$	S. 58° 2′	1	Achernar.

Approximate Transits of α Eridani on the first of each month.

Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
h m	h m	h m	h m	h m	h m	h m	h m	h m	h m	h m	h m
6 48	4 46	2 56	0 54	22 52	20 53	18 52	16 50	14 49	12 51	10 48	8 51

(137.) This constellation (the river Eridanus) winds over a considerable space in the heavens; extending from 5° S. to 60° S. β Eridani is a small star a little to the north of β Orionis (114): γ^1 Eridani, between the second and third magnitude, may be found by drawing a line from Procyon (α Canis Minoris) (121) to Rigel, and producing it about half its length.

RULE 52. *To find Achernar* (α Eridani).

(138.) A line drawn from Fomalhaut (110) to Canopus (127) is bisected by this star.

(139.) The following list will complete the catalogue of bright stars of the first and second magnitude in the southern constellations.

Character.	Right Ascen.	Declination.	Mag.	Constellations.
α Columbæ.	$5^h\ 35^m$	S. 34° 9′	2	Columba, the Dove.
α Phœnicis.	0 19	43 11	2	Phœnix, the Phœnix.
α Trianguli Australis.	16 32	68 47	2	Triangulum Australe, the Southern Triangle.
α Pavonis.	20 15	57 9	2	Pavo, the Peacock.
α Gruis.	22 0	47 36	2	Grus, the Crane.

RULE 53. *To find α in the Dove* (α Columbæ).

(140.) A line drawn from Procyon (121) to Sirius (118), and produced nearly the same distance, will pass near this star. It appears a few degrees above our horizon (lat. 50°) when passing the meridian. It passes our

meridian in the months of January and February between the hours of ten and seven; and therefore may be conveniently seen in these months (see Traverse Table).

RULE 54. *To find α in the Phœnix.*

(141.) This star is midway between Fomalhaut (110) and Achernar (138) a little on one side of the line joining them.

RULE 55. *To find α in the Southern triangle, α in the Peacock, and α in the Crane.*

(142.) A line drawn from the bright stars in the Centaur (131) to Fomalhaut (110) will pass near these three stars; α Trianguli Australis being about the same distance from α Centauri as the latter star is from α Crucis; α Pavonis about twice that distance, and α Gruis a little more than once the same distance.

RULE 56. *To find the Planets Jupiter, Mars, Saturn, and Venus.*

(143.) The four planets Jupiter, Mars, Saturn, and Venus, from their superior brightness, are of considerable use to the seaman in determining the place of the ship. To distinguish them among the other stars, we must proceed in a different manner from that pointed out in the preceding Rules: for on account of their own proper motion about the sun they appear to be continually shifting their places with respect to the other heavenly bodies, and cannot therefore be connected by any definite line with them, as in the case of the fixed stars.

The observer, however, will meet with very little difficulty in identifying the planets, and the place they occupy in the heavens at any given time, if he have at hand a *Nautical Almanac*, or any other almanac containing their right ascension and declination, and the time of their passing the meridian, that is, their transits; for he will then be able to find their places in the celestial concave by either of the three following methods.

First method: Estimate the meridian altitude of the supposed planet by the eye, and the time of its transit, and then calculate its meridian altitude from knowing its declination and the latitude of the place by the rule at the end of the book. If the altitude thus calculated agree nearly with the estimated one, and the time of the transit in the almanac with the estimated transit, we may conclude that our supposition is right, and that it is the planet we suspected it to be. (Ex. 1.) (See also note to Art. 9.)

Second method: Knowing, from the almanac, the time of the transit of the planet which the one observed is suspected to be, ascertain by the Transit Table at the end of the book what known star passes the meridian about the same time, and note also the distance between them; then by comparing their

declination, the position of one with respect to the other is found; and if this agrees with the observation, our supposition will be right. (Ex. 2.)

Third method: Estimate the bearing and distance of some known star from the supposed planet: then by means of the right ascensions and declinations of the two heavenly bodies, their bearing and distance may be calculated. If the estimated and computed quantities agree nearly, we may conclude that our supposition is right. (Ex. 3.) This method is nearly in all cases the best, as the observer can determine the name of the planet by observing it at any time in the evening, and need not wait for its transit, as in the other methods.

Ex. 1. (First method.) On Sept. 28, 1867, in lat. 50° N., a planet (supposed to be Jupiter) passed the meridian about $9^h\ 30^m$ P.M., at an altitude of about 30°. On referring to the almanac, we find Jupiter's transit on that day was at $9^h\ 37^m$ P.M., and its decl. 13° S. Therefore (by the Rule), its meridian alt. $= 90° - (50° + 13°) = 27°$. As this agrees nearly with the estimated time and altitude, the planet observed was, no doubt, Jupiter.

Ex. 2. (Second method.) On Sept. 28, 1867, a large star (supposed to be Jupiter) passed the meridian about $9^h\ 30^m$ P.M., and about an hour afterwards Fomalhaut (α Piscis Australis) passed about 20° to the south of the other star. By referring to the Transit Table we find that Fomalhaut passed the meridian about $10^h\ 27^m$ P.M., and its declination was 30° S.; and therefore the decl. of supposed planet would be about 10° S. By almanac, Jupiter's transit was $9^h\ 37^m$ P.M., and decl. 13° S. on that night. As these quantities agree sufficiently near with the estimated transit and declination, we may conclude the heavenly body was Jupiter.

Ex. 3. (Third method.) On Sept. 28, 1867, a planet (supposed to be Jupiter) was observed to bear from α Pegasi south-easterly about 30°. By the almanac, the R. A. of Jupiter was $22^h\ 5^m$, and decl. 13° S.: R. A. of α Pegasi, $22^h\ 58^m$, decl. 14° N. By means of these data the observer may sketch (roughly) on paper the relative positions of the two bodies. On making the figure in this case, it was found the bearing and distance agreed with the observation: hence we conclude the planet was Jupiter.

Rule 57. *General Rule for finding Stars below the Second Magnitude.*

(144.) The rules given in the preceding pages will be sufficient for finding all the stars of the first and second magnitude. It will not be necessary for our purpose to proceed in the same manner for stars of a less magnitude. If we wish to acquire a knowledge of the smaller stars, we may easily make for ourselves similar rules to those already given: namely by connecting the unknown star with two that are known, and then comparing the corresponding distances on a chart or globe. For example, an observer will see on a fine night two stars of the third magnitude to the north of Cygnus: he finds they are in a line with δ Aquilæ and α Cygni: the nearest to α Cygni is about

one-third the distance of α Cygni from α Aquilæ, and the distance between the two unknown stars is about half the distance of the nearest from α Cygni. On referring to a globe or map of the stars he will find by means of these data the two stars to be in the constellation of Cepheus: the nearest is α, the other β Cephei. In this manner, by comparing the distance and bearing of the unknown star from stars that are known, the observer may easily acquire the names of all the stars marked on his map.

Method of learning the Names and Positions of the Stars by means of a Diagram.

(145.) This method consists in constructing a figure or diagram showing the face of the heavens at any given time and place. The figure thus drawn will be similar to the one in page 5, but modified to suit the latitude of the spectator. In the figure on p. 5, the circle NWSE represents the horizon, NS the celestial meridian, WZE the prime vertical, and WQE the celestial equator, ZQ or NP the latitude of the spectator; and since in that figure NP (the altitude of the pole) appears to be about one-half of NZ, it is constructed for a place in latitude about 45° N. (see p. 7). For any other latitude the point P (the pole of the heavens) must be so placed that the altitude of the pole NP may be equal to the latitude, and the celestial equator WQE so drawn as to make the arc ZQ equal to the latitude. It will not be necessary to draw the figure with such accuracy as to require a compass and scale, for the student, after a little practice, will be able to construct it without the aid of instruments with sufficient correctness for the purpose in question. The figure, consisting of the above lines, being thus drawn to suit the latitude of the observer, he may then proceed to place in it the principal heavenly bodies that shall be above his horizon at the required hour. For this purpose, he may either make use of their right ascensions and declinations, or what will in most cases be easiest, their hour-angles and declinations. An example for a place in latitude 50° N. on Nov. 1 at 9^h P.M. will perhaps be sufficient to point out the method to be followed for any other time and place.

Ex. Show, by means of a diagram, the relative positions of some of the principal stars that will be above the horizon at a place in latitude 50° N. on Nov. 1 at 9^h P.M.

By means of the Transit Table at the end of the book we can easily deduce the hour-angles of the principal stars for 9^h P.M. on Nov. 1. Since stars' hour-angle = time of transit ~ mean time,

= time of transit ~ 9^h (in this case).

It is evident that when the time of transit is greater than mean time, the hour angle is *East;* that is, the heavenly body will be east of the meridian at 9^h P.M. When the transit is less than mean time, the hour-angle is *West*, or the body must be placed in the diagram on the west of the meridian.

We will confine our attention to a few of the principal stars whose hour-angles do not exceed five hours on both sides of the meridian at 9^h P.M.; that

is, those stars whose transits take place between $9^h - 5^m$ and $9^h + 5^h$, or between 4 o'clock and 14 o'clock on Nov. 1. These will be sufficient to point out to the student the method he must follow if he wish to make a more extensive map or plan of the visible heavens for any other time and place.

On referring to the Transit Table we see there are several bright stars that will pass the meridian on Nov. 1 between 4^h P.M. and 14^h or 2^h A.M. We will select from among them the following six, and place them in a diagram in their relative positions: α Aquilæ, α Piscis Australis, α Pegasi, α Andromedæ, α Tauri, and α Aurigæ.

Transits on Nov. 1, from Transit Table.

Character.	Declination.	Transit.	Hence Hour-angles at 9 P.M. are·
α Aquilæ.	N. 8°	5^h 0^m	4 0 W.
α Piscis Australis.	S. 30	8 6	0 54 W.
α Pegasi.	N. 14	8 14	0 46 W.
α Andromedæ.	N. 28	9 16	0 16 E.
α Tauri.	N. 16	13 43	4 43 E.
α Aurigæ.	N. 46	14 21	5 21 E.

Construction of Diagram. (*See Frontispiece.*)

Let the circle NWSE represent the horizon, NS the celestial meridian, WZE the prime vertical. Take NP=50° the latitude, then P is the north pole of the heavens; make ZQ=NP, and draw WQE, the celestial equator. Then place in the diagram the above six stars, according to their hour-angles and declinations: thus the star α Aquilæ is placed so that its hour-angle should be about 4^h W. and decl. 8° N.; Fomalhaut so that its hour-angle should be $0^h\ 54^m$ W. and decl. 30° S.; and so with respect to the others. The figure may then be compared with the heavens, when the stars corresponding to those on the diagram will be readily distinguished, and thus their names will be known. The diagram is supposed to be drawn *liberâ manu*, without the aid of compass and scale; and unless great accuracy is required, and a large number of stars are to be inserted in the diagram, such a rough approximation will be found sufficiently correct to determine the names and positions of the stars delineated. The student, in constructing a diagram with a larger number of stars, should place their names outside the diagram opposite each star: this will render the figure clear and less confused.

POSITIONS OF THE

PRINCIPAL CONSTELLATIONS AND STARS,

On the first of each Month, in Lat. 50° N. at 9h P.M.

Month.	East of Meridian.	Near		West of Meridian.	Towards the Pole.
		Meridian.	Zenith.		
Jan.	Capella, Orion, Sirius, Procyon, Gemini, Regulus (rising).	Pleiades, Aldebaran.	Perseus.	Cetus, Aries, Andromeda, Pegasus.	To the right—Great Bear. Below—Little Bear, Dragon. To the left—Cassiopeia, Cygnus.
Feb.	Sirius, Procyon, Gemini, Leo, α Hydræ.	Sirius, Orion, the Dove.	Auriga.	The Bull, Pleiades, Aries, Cetus, Perseus, Andromeda, Pegasus.	
March.	α Hydræ, Leo, Arcturus, Spica (rising).	Procyon, Argo.	Gemini.	Sirius, Orion, Capella, Aldebaran, Aries.	To the right—the two Bears, Dragon. Below—Cygnus.
April.	Spica, Arcturus, Northern Crown, Cor Caroli, β Leonis.	Hydra, Leo.		Procyon, Gemini, Orion, Aldebaran, Capella, Sirius.	To the left—Cassiopeia, Perseus, Andromeda.
May.	Spica, Libra, Arcturus, Crown, α Serpentis, Ophiuchus.	β Leonis.	Great Bear.	Hydra, Lion, Procyon, Gemini, Capella in Auriga.	To the right—Dragon, Little Bear, α Cygni, Lyra. Below—Cassiopeia. To the left—Perseus.
June.	Libra, Antares, Serpens, Ophiuchus, Hercules, Crown, Lyra, Eagle (rising).	Spica, Arcturus.	η Urs. Maj.	Virgo, Leo, Hydra, Gemini.	
July.	Ophiuchus, Hercules, Eagle, the Swan, Lyra, Pegasus (rising).	Antares, α Serpentis. Crown.	Dragon.	Libra, Virgo, Arcturus, Lion.	Above—Dragon, Little Bear. To the right—Cassiopeia.
Aug.	Eagle, Swan, Pegasus.	Ophiuchus, Hercules.	Lyra, γ Draconis.	Scorpion, Libra, Serpent, Crown, Arcturus in Bootes.	Below—Perseus, Auriga. To the left—Gt. Bear.
Sept.	Pegasus, Andromeda, Aries.	Eagle.	Swan, Lyra.	Arcturus, Serpens, Ophiuchus, Hercules, Crown.	To the right—Cassiopeia. To the left—the Bears.
Oct.	Aries, Cetus, Pegasus, Andromeda, Perseus, Fomalhaut.			Eagle, Hercules, Lyra, Crown.	To the right—Cassiopeia, Auriga. Below—Great Bear.
Nov.	Andromeda, Aries, Taurus, Whale, Orion (rising).	Pegasus, Fomalhaut.		Eagle, Swan, Lyra.	To the left—Little Bear, Dragon.
Dec.	Eridanus, Taurus, Whale, Orion, Twins, Perseus.	Whale.	Andromeda.	Pegasus, Andromeda, Swan, Lyra.	Above—Cassiopeia. To the right—Great Bear. To the left—Dragon.

Approximate Mean Times when the principal Stars bear due East or West of a Spectator in Latitude 50° N. *on the first of each Month.*

Alt.		January.		February.		March.		April.		May.		June.		July.		August.		September.		October.		November.		December.	
		E.	W.	E.	W.	E.	W.	E.	W.	E.	W.	E.	W.	E.	W.	E.	W.	E.	W.	E.	W.	E.	W.	E.	W.
°		h m	h m	h m	h m	h m	h m	h m	h m	h m	h m	h m	h m	h m	h m	h m	h m	h m	h m	h m	h m	h m	h m	h m	h m
67	Capella . .	8 6	12 34	6 5	10 33	4 14	8 42	2 12	6 40	0 15	4 43	22 13	2 41	20 10	0 38	18 9	22 37	16 7	20 35	14 9	18 37	12 7	16 55	10 9	14 37
53	α Lyræ . .	20 26	3 4	18 25	1 3	16 34	23 12	14 32	21 10	12 34	19 12	10 33	17 11	8 34	15 12	6 33	13 11	4 31	11 9	2 33	9 11	0 31	7 9	22 33	5 11
7	Procyon . .	7 4	18 28	5 2	16 26	3 12	14 36	1 10	12 34	23 12	10 36	21 11	8 35	19 12	6 36	17 6	4 30	15 5	2 29	13 7	0 31	11 4	22 28	9 6	20 30
26	Arcturus . .	14 32	0 14	12 30	22 12	10 40	20 22	8 38	18 20	6 40	16 22	4 39	14 21	2 40	12 22	0 38	10 20	22 37	8 19	20 39	6 21	18 32	4 14	16 35	2 17
16	Regulus . .	9 57	20 33	7 55	18 31	6 4	16 40	4 3	14 39	2 5	12 41	0 3	10 39	22 5	8 41	20 3	6 39	17 57	4 33	16 0	2 36	13 57	0 33	11 59	22 35
19	α Pegasi . .	23 0	9 24	20 59	7 23	19 8	5 32	17 2	3 26	15 5	1 29	13 3	23 28	11 5	21 29	9 4	19 28	7 2	17 26	5 4	15 28	3 2	13 26	1 4	11 28
43	Castor . . .	8 43	16 37	6 41	14 35	4 51	12 45	2 49	10 43	0 51	8 45	22 50	6 44	20 51	4 45	18 45	2 39	16 46	0 40	14 46	22 40	12 43	20 37	10 46	18 40
37	α Andromedæ	1 0	9 32	22 59	7 31	21 8	5 40	19 2	3 34	17 5	1 37	15 3	23 35	13 4	21 36	11 3	19 35	9 1	17 33	7 3	15 35	5 0	13 32	3 2	11 34
47	β Andromedæ	2 36	9 58	0 34	7 56	22 44	6 6	20 42	4 4	18 40	2 2	16 39	0 1	14 40	22 2	12 37	19 59	10 37	17 59	8 39	16 1	6 36	13 58	4 38	12 0
77	α Persei . .	7 13	9 45	5 11	7 43	3 20	5 52	1 19	3 51	23 21	1 53	21 15	23 47	19 17	21 49	17 15	19 47	15 13	17 45	13 16	15 48	11 13	13 45	9 15	11 47
38	β Tauri . .	6 19	14 45	4 18	12 44	2 27	10 53	0 25	8 51	22 28	6 54	20 26	4 52	18 23	2 49	16 22	0 48	14 20	22 46	12 22	20 48	10 20	18 46	8 22	16 48
11	α Aquilæ . .	19 8	6 52	17 2	4 46	15 12	2 56	13 10	0 54	11 12	22 56	9 10	20 54	7 12	18 56	5 10	16 54	3 9	14 53	1 11	12 55	23 8	10 52	21 11	8 55
36	α Cor. Bor. .	16 22	1 2	14 20	23 0	12 29	21 9	10 28	19 8	8 30	17 10	6 28	15 8	4 30	13 10	2 28	11 8	0 26	9 6	22 29	7 9	20 26	5 6	18 24	3 4
16	α Ophiuchi .	17 27	3 58	15 27	1 57	13 32	0 6	11 30	22 4	9 33	20 7	7 31	18 5	5 32	16 6	3 31	14 5	1 29	12 3	23 31	10 5	21 29	8 3	19 31	6 5
21	Aldebaran .	4 37	14 49	2 35	12 47	0 44	10 56	22 43	8 55	20 45	6 57	18 39	4 51	16 41	2 53	14 39	0 51	12 37	22 49	10 40	20 52	8 37	18 49	6 39	16 51

APPROXIMATE MEAN TIMES

OF THE

TRANSITS OF THE PRINCIPAL STARS.

Declination.		JANUARY.												FEBRUARY.											
		1.		6.		11.		16.		21.		26.		1.		6.		11.		16.		21.		26.	
°		H.	M.	H.	M.	H.	M.	H.	M.	H.	M.	H.	M.	H.	M.	H.	M.	H.	M.	H	M	H.	M.	H.	M.
28 N.	α Androm.. 1·2	5	16	4	56	4	37	4	17	3	58	3	39	3	15	2	55	2	35	2	16	1	56	1	36
58 N.	β Cassiop...2·3	5	17	4	57	4	38	4	18	3	59	3	40	3	16	2	56	2	36	2	17	1	57	1	37
14 N.	γ Pegasi ...2·3	5	21	5	1	4	42	4	22	4	3	3	44	3	20	3	0	2	40	2	21	2	1	1	41
78 S.	β Hydri ...3	5	34	5	14	4	55	4	35	4	16	3	57	3	33	3	13	2	53	2	34	2	14	1	54
43 S.	α Phœnicis 2	5	35	5	15	4	56	4	36	4	17	3	58	3	34	3	14	2	54	2	35	2	15	1	55
56 N.	α Cassiop...3	5	48	5	28	5	9	4	49	4	29	4	10	3	46	3	26	3	6	2	48	2	28	2	8
19 S.	β Ceti 2·3	5	52	5	32	5	13	4	53	4	33	4	14	3	51	3	31	3	11	2	52	2	32	2	12
35 N.	β Androm. 2	6	17	5	57	5	38	5	18	4	58	4	39	4	15	3	56	3	36	3	17	2	57	2	37
88 N.	Pole Star...2·3	6	19	5	59	5	40	5	20	5	0	4	41	4	17	3	58	3	38	3	19	2	59	2	39
9 S.	δ^1 Ceti 3	6	32	6	12	5	53	5	33	5	13	4	54	4	30	4	10	3	50	3	32	3	12	2	52
58 S.	α Eridani ..1	6	48	6	28	6	9	5	49	5	29	5	10	4	46	4	26	4	6	3	48	3	28	3	8
23 N.	α Arietis...3	7	14	6	54	6	35	6	15	5	55	5	36	5	12	4	52	4	32	4	13	3	54	3	34
3 N.	γ Ceti 3	7	51	7	31	7	12	6	52	6	32	6	13	5	50	5	30	5	10	4	51	4	31	4	11
4 N.	α Ceti 2·3	8	10	7	50	7	31	7	11	6	51	6	32	6	8	5	48	5	28	5	9	4	49	4	29
40 N.	β Persei ...2·3	8	14	7	54	7	35	7	15	6	55	6	36	6	12	5	52	5	32	5	13	4	53	4	33
49 N.	α Persei ...2·3	8	29	8	9	7	50	7	30	7	10	6	51	6	27	6	7	5	47	5	28	5	8	4	48
24 N.	η Tauri....3	8	54	8	34	8	15	7	55	7	35	7	16	6	53	6	33	6	13	5	54	5	34	5	14
14 S.	γ_1 Eridani ..2·3	9	7	8	47	8	28	8	8	7	48	7	29	7	6	6	46	6	26	6	7	5	47	5	27
16 N.	α Tauri....1	9	43	9	23	9	4	8	44	8	24	8	5	7	41	7	21	7	1	6	42	6	22	6	2
46 N.	α Aurigæ ..1	10	20	10	0	9	42	9	22	9	2	8	43	8	19	7	59	7	39	7	20	7	0	6	40
8 S.	β Orionis ..1	10	22	10	2	9	44	9	24	9	4	8	45	8	21	8	1	7	41	7	22	7	2	6	42
28 N.	β Tauri....2	10	32	10	12	9	52	9	34	9	14	8	55	8	31	8	11	7	51	7	32	7	12	6	52
6 N.	γ Orionis ..2	10	32	10	12	9	52	9	34	9	14	8	55	8	31	8	11	7	51	7	32	7	12	6	52
0 S.	δ Orionis ..2	10	39	10	19	10	0	9	41	9	21	9	2	8	38	8	18	7	58	7	39	7	19	6	59
18 S.	α Leporis ..3·4	10	41	10	21	10	2	9	43	9	23	9	4	8	40	8	20	8	0	7	41	7	21	7	1
1 S.	ε Orionis ..2·3	10	43	10	23	10	4	9	45	9	25	9	6	8	42	8	22	8	2	7	43	7	23	7	3
34 S.	α Columbæ 2	10	49	10	29	10	10	9	51	9	31	9	12	8	48	8	28	8	8	7	49	7	29	7	9
7 N.	α Orionis ..1	11	2	10	42	10	23	10	3	9	44	9	25	9	1	8	41	8	21	8	2	7	42	7	22
45 N.	β Aurigæ ..2	11	3	10	43	10	24	10	4	9	44	9	26	9	2	8	42	8	22	8	3	7	43	7	23
18 S.	β Canis Maj.2·3	11	31	11	11	10	52	10	32	10	12	9	54	9	30	9	10	8	50	8	31	8	11	7	51
23 N.	μ Geminor. 3	11	29	11	9	10	50	10	30	10	10	9	52	9	28	9	8	8	48	8	29	8	9	7	49
53 S.	ε Argus ...1	11	36	11	16	10	57	10	37	10	17	9	58	9	35	9	15	8	55	8	36	8	16	7	56
87 N.	51 Cephei ..6	11	42	11	22	11	3	10	43	10	23	10	4	9	41	9	21	9	1	8	42	8	22	8	2
17 S.	α Canis Maj.1	11	53	11	33	11	14	10	54	10	34	10	15	9	52	9	32	9	12	8	53	8	33	8	13
29 S.	ε Canis Maj.2·3	12	8	11	48	11	29	11	9	10	49	10	30	10	6	9	47	9	27	9	8	8	48	8	28
22 N.	δ Geminor .3·4	12	26	12	6	11	47	11	27	11	7	10	48	10	24	10	5	9	45	9	26	9	6	8	46
32 N.	α' Geminor..1	12	40	12	20	12	1	11	41	11	21	11	2	10	38	10	18	9	58	9	40	9	20	9	0
6 N.	α Canis Min.1·2	12	46	12	26	12	7	11	47	11	27	11	8	10	44	10	24	10	4	9	46	9	26	9	6
28 N.	β Geminor. .2	12	51	12	31	12	12	11	52	11	32	11	13	10	49	10	29	10	10	9	51	9	31	9	11
24 S.	15 Argus ...3·4	13	16	12	56	12	37	12	17	11	57	11	38	11	14	10	54	10	34	10	15	9	55	9	36
47 S.	γ^2 Argus ...2	13	20	13	0	12	41	12	21	12	1	11	42	11	18	10	58	10	38	10	19	9	59	9	40
59 S.	ι Argus ...2	13	34	13	14	12	55	12	35	12	15	11	56	11	32	11	12	10	52	10	33	10	13	9	54
7 N.	ε Hydræ...4	13	54	13	34	13	15	12	55	12	35	12	16	11	52	11	32	11	12	10	53	10	33	10	14
49 N.	ι Ursæ Maj. 3·4	14	4	13	44	13	25	13	5	12	45	12	26	12	2	11	42	11	22	11	3	10	43	10	24
69 S.	β Argus ...2	14	26	14	6	13	47	13	27	13	7	12	48	12	24	12	4	11	44	11	25	11	5	10	45
59 S.	ι Argus....2	14	28	14	8	13	49	13	29	13	9	12	50	12	26	12	6	11	46	11	27	11	7	10	47
8 S.	α Hydræ...2	14	35	14	15	13	56	13	36	13	16	12	57	12	33	12	13	11	53	11	34	11	14	10	54
52 N.	θ Ursæ Maj. 3	14	38	14	18	13	59	13	39	13	19	13	0	12	36	12	16	11	56	11	37	11	17	10	57
24 N.	ε Leonis ...3	14	52	14	32	14	13	13	53	13	33	13	14	12	50	12	30	12	10	11	51	11	31	11	11
13 N.	α Leonis ...1	15	15	14	55	14	36	14	16	13	56	13	37	13	13	12	53	12	33	12	14	11	54	11	34
21 N.	γ Leonis ...2	15	26	15	6	14	47	14	27	14	7	13	48	13	24	13	4	12	44	12	25	12	5	11	45
64 S.	δ^2 Argus ...2·3	15	51	15	32	15	13	14	53	14	33	14	14	13	50	13	30	13	10	12	51	12	31	12	11
59 S.	η Argus....1	15	52	15	34	15	15	14	55	14	35	14	16	13	52	13	32	13	12	12	53	12	33	12	13
57 N.	β Ursæ Maj. 2	16	6	15	47	15	28	15	8	14	48	14	29	14	5	13	45	13	25	13	6	12	46	12	26
63 N.	α Ursæ Maj. 1·2	16	8	15	49	15	30	15	10	14	50	14	31	14	7	13	47	13	27	13	8	12	48	12	28
21 N.	δ Leonis ...3	16	20	16	1	15	42	15	22	15	2	14	43	14	19	13	59	13	39	13	20	13	0	12	40
14 S.	δ Hydræ...3·4	16	26	16	7	15	48	15	28	15	8	14	49	14	25	14	5	13	45	13	26	13	6	12	46
15 N.	β Leonis ...2·3	16	55	16	35	16	16	15	57	15	37	15	18	14	54	14	34	14	14	13	55	13	35	13	15
55 N.	γ Ursæ Maj. 2	17	0	16	40	16	21	16	1	15	42	15	23	14	59	14	39	14	19	14	0	13	40	13	20
78 S.	β Chamæl. .5	17	23	17	3	16	44	16	24	15	4	15	46	15	22	15	2	14	42	14	23	14	3	13	43

Declination.		JANUARY.												FEBRUARY.											
		1.		6.		11.		16.		21.		26.		1.		6.		11.		16.		21.		26.	
°		H.	M.	H.	M.	H.	M.	H.	M.	H.	M.	H.	M.	H.	M.	H.	M.	H.	M.	H.	M.	H.	M.	H.	M.
62 S.	α^2 Crucis ...1	17	32	17	12	16	53	16	33	16	13	15	55	15	31	15	11	14	51	14	32	14	12	13	52
56 S.	γ Crucis ...2·3	17	37	17	17	16	58	16	38	16	18	16	0	15	36	15	16	14	56	14	37	14	17	13	57
23 S.	β Corvi....2·3	17	40	17	20	17	1	16	41	16	21	16	2	15	39	15	19	14	59	14	40	14	20	14	0
59 S.	β Crucis ...2	17	53	17	33	17	14	16	54	16	34	16	15	15	51	15	32	15	12	14	53	14	33	14	13
39 N.	12 Can.Ven. 2	18	3	17	43	17	24	17	4	16	44	16	25	16	1	15	42	15	22	15	3	14	43	14	23
10 S.	α Virginis..1	18	31	18	11	17	52	17	32	17	12	16	53	16	29	16	9	15	50	15	31	15	11	14	51
50 N.	η Ursæ Maj. 2·3	18	55	18	35	18	16	17	56	17	36	17	17	16	53	16	33	16	13	15	55	15	35	15	15
19 N.	α Bootis....3	19	1	18	41	18	22	18	2	17	42	17	23	16	59	16	39	16	19	16	1	15	41	15	21
60 S.	β Centauri .1	19	7	18	47	18	28	18	8	17	48	17	29	17	5	16	45	16	25	16	6	15	47	15	27
36 S.	δ Centauri .2	19	12	18	52	18	33	18	13	17	53	17	34	17	10	16	50	16	30	16	11	15	52	15	32
65 N.	α Draconis .3	19	14	18	54	18	34	18	15	17	55	17	36	17	12	16	52	16	32	16	13	15	54	15	34
20 N.	α Bootis ...1	19	23	19	3	18	44	18	24	18	4	17	45	17	21	17	1	16	41	16	22	16	2	15	43
60 S.	α^2 Centauri .1	19	43	19	23	19	4	18	44	18	24	18	5	17	41	17	21	17	1	16	42	16	22	16	2
28 N.	ι Bootis ...3	19	52	19	32	19	13	18	53	18	33	18	14	17	50	17	30	17	10	16	51	16	31	16	11
15 S.	α^2 Libræ ...3	19	56	19	36	19	17	18	57	18	37	18	18	17	54	17	34	17	14	16	55	16	35	16	15
75 N.	β Ursæ Min.3	20	5	19	45	19	26	19	6	18	46	18	27	18	3	17	43	17	23	17	4	16	44	16	24
9 S.	β Libræ ...2·3	20	23	20	3	19	44	19	24	19	4	18	45	18	21	18	1	17	41	17	22	17	2	16	42
27 N.	α Coro. Bor. 2	20	42	20	22	20	3	19	43	19	23	19	4	18	40	18	20	18	0	17	41	17	21	17	1
7 N.	α Serpentis.2·3	20	51	20	31	20	12	19	52	19	32	19	13	18	49	18	29	18	9	17	50	17	30	17	10
78 N.	ζ Ursæ Min.4	21	4	20	44	20	25	20	5	19	45	19	26	19	2	18	42	18	22	18	3	17	43	17	23
19 S.	β_1 Scorpii ..2	21	10	20	50	20	31	20	11	19	51	19	32	19	8	18	48	18	28	18	9	17	49	17	29
3 S.	δ Ophiuchi.3	21	20	21	0	20	41	20	21	20	1	19	42	19	18	18	58	18	38	18	19	17	59	17	39
26 S.	α Scorpii...1	21	34	21	14	20	55	20	35	20	15	19	56	19	32	19	12	18	52	18	33	18	13	17	53
62 N.	η Draconis .3	21	36	21	16	20	57	20	37	20	17	19	58	19	34	19	14	18	54	18	35	18	15	17	55
21 N.	β Herculis .2·3	21	38	21	18	20	59	20	39	20	19	20	0	19	36	19	16	18	56	18	37	18	17	17	57
69 S.	α Tria. Aust.2	21	46	21	26	21	7	20	47	20	27	20	8	19	44	19	24	19	4	18	45	18	25	18	5
16 S.	η Ophiuchi .2·3	22	15	21	55	21	36	21	16	20	56	20	37	20	13	19	53	19	33	19	14	18	54	18	34
82 N.	ι Ursæ Min.4	22	16	21	56	21	37	21	17	20	57	20	38	20	14	19	54	19	34	19	15	18	55	18	35
15 N.	α Herculis. 3·4	22	22	22	2	21	43	21	23	21	3	20	44	20	20	20	0	19	40	19	21	19	1	18	41
89 S.	σ Octantis..6	22	36	22	16	21	57	21	38	21	18	20	59	20	35	20	15	19	55	19	36	19	16	18	56
52 N.	β Draconis .2	22	40	22	20	22	1	21	42	21	22	21	3	20	39	20	19	19	59	19	40	19	20	19	0
13 N.	α Ophiuchi.2	22	41	22	21	22	2	21	43	21	23	21	4	20	40	20	20	20	0	19	41	19	21	19	1
52 N.	γ Draconis .2	23	6	22	46	22	27	22	7	21	48	21	29	21	5	20	45	20	25	20	6	19	46	19	26
21 S.	μ Sagittarii.3·4	23	18	22	58	22	39	22	19	22	0	21	41	21	17	20	57	20	37	20	18	19	58	19	38
87 N.	δ Ursæ Min.3	23	35	23	15	22	56	22	36	22	16	21	57	21	34	21	14	20	54	20	35	20	15	19	55
39 N.	α Lyræ 1	23	45	23	25	23	6	22	46	22	26	22	7	21	44	21	24	21	4	20	45	20	25	20	5
33 N.	β Lyræ 3	23	57	23	37	23	18	22	58	22	38	22	19	21	56	21	36	21	16	20	57	20	37	20	17
14 N.	ζ Aquilæ ..3	0	15	23	51	23	32	23	12	22	52	22	33	22	10	21	50	21	30	21	11	20	51	20	31
3 N.	δ Aquilæ ..3·4	0	35	0	15	23	52	23	32	23	12	22	53	22	30	22	10	21	50	21	30	21	11	20	51
10 N.	γ Aquilæ ..3	0	56	0	36	0	17	23	53	23	33	23	14	22	51	22	31	22	11	21	52	21	32	21	12
8 N.	α Aquilæ ..1·2	1	0	0	40	0	21	0	1	23	37	23	18	22	54	22	34	22	14	21	56	21	36	21	16
6 N.	β Aquilæ ..3·4	1	5	0	45	0	26	0	6	23	42	23	23	22	59	22	39	22	19	22	1	21	41	21	21
13 S.	α^2 Capricor. 3	1	31	1	11	0	52	0	32	0	12	23	49	23	25	23	5	22	45	22	26	22	6	21	47
57 S.	α Pavonis ..2	1	34	1	14	0	55	0	35	0	15	23	52	23	28	23	8	22	48	22	29	22	9	21	50
89 N.	λ Ursæ Min.5	1	38	1	18	0	59	0	39	0	19	23	56	23	32	23	12	22	52	22	33	22	13	21	54
45 N.	α Cygni. ..2	1	53	1	33	1	14	0	54	0	34	0	15	23	47	23	27	23	7	22	48	22	28	22	8
38 N.	61 Cygni ..5·6	2	17	1	57	1	38	1	18	0	58	0	39	0	15	23	51	23	31	23	12	22	52	22	32
30 N.	ζ Cygni....3	2	23	2	3	1	44	1	24	1	4	0	45	0	21	0	1	23	37	23	18	22	58	22	38
62 N.	α Cephei...3	2	32	2	12	1	53	1	38	1	13	0	54	0	30	0	10	23	46	23	27	23	7	22	47
6 S.	β Aquarii ..3	2	40	2	20	2	1	1	41	1	21	1	2	0	38	0	18	23	54	23	35	23	15	22	55
70 N.	β Cephei...3	2	44	2	24	2	5	1	45	1	25	1	6	0	42	0	22	0	2	23	39	23	19	22	59
9 N.	ι Pegasi ...2·3	2	54	2	34	2	15	1	55	1	35	1	16	0	52	0	32	0	12	23	49	23	29	23	9
1 S.	α Aquarii ..3	3	15	2	55	2	36	2	16	1	56	1	37	1	13	0	53	0	33	0	14	23	50	23	30
48 S.	α Gruis....2	3	15	2	55	2	36	2	16	1	56	1	37	1	13	0	53	0	33	0	14	23	50	23	30
10 N.	ζ Pegasi ...3	3	51	3	31	3	12	2	52	2	32	2	13	1	49	1	29	1	9	0	50	0	30	0	10
30 S.	α Pisc. Aust.1	4	5	3	46	3	27	3	7	2	47	2	28	2	4	1	44	1	24	1	5	0	45	0	25
27 N.	β Pegasi ...2	4	12	3	53	3	34	3	14	2	54	2	35	2	11	1	51	1	31	1	12	0	52	0	32
14 N.	α Pegasi ...2	4	13	3	54	3	35	3	15	2	55	2	36	2	12	1	52	1	32	1	13	0	53	0	33
5 N.	ι Piscium..4·5	4	48	4	29	4	10	3	50	3	30	3	11	2	47	2	27	2	7	1	48	1	28	1	8
77 N.	γ Cephei...3	4	49	4	30	4	11	3	51	3	31	3	12	2	48	2	28	2	8	1	49	1	29	1	9

Declination.		MARCH.										APRIL.														
		1.		6.		11.		16.		21.		26		1.		6.		11.		16.		21.		26.		
°		H.	M.	H.	M.	H.	M.	H.	M.	H.	M.	H.	M.	H.	M.	H.	M.	H.	M.	H.	M.	H.	M.	H	M.	
28 N.	α Androm.	1·2	1	24	1	5	0	45	0	25	0	6	23	42	23	18	22	58	22	39	22	19	21	59	21	40
58 N.	β Cassiop.	2·3	1	25	1	6	0	46	0	26	0	7	23	43	23	19	22	59	22	40	22	20	22	0	21	42
14 N.	γ Pegasi	2·3	1	29	1	10	0	50	0	30	0	11	23	47	23	23	23	3	22	44	22	24	22	4	21	46
78 S.	β Hydri	3	1	42	1	23	1	3	0	43	0	24	0	4	23	36	23	16	22	57	22	37	22	17	21	59
43 S.	α Phœnicis	2	1	43	1	24	1	4	0	44	0	25	0	5	23	37	23	17	22	58	22	38	22	18	22	0
56 N.	α Cassiop.	3	1	56	1	37	1	17	0	57	0	38	0	18	23	50	23	30	23	11	22	51	22	31	22	13
19 S.	β Ceti	2·3	2	0	1	41	1	21	1	1	0	42	0	22	23	54	23	34	23	15	22	55	22	35	22	16
35 N.	β Androm.	2	2	25	2	6	1	46	1	26	1	7	0	47	0	23	0	3	23	40	23	20	23	0	22	41
88 N.	Pole Star.	2·3	2	27	2	8	1	48	1	28	1	9	0	49	0	25	0	5	23	42	23	22	23	2	22	43
9 S.	δ¹ Ceti	3	2	40	2	21	2	1	1	41	1	22	1	2	0	38	0	18	23	55	23	35	23	15	22	56
58 S.	α Eridani	1	2	56	2	37	2	17	1	57	1	38	1	18	0	54	0	34	0	15	23	51	23	31	23	12
23 N.	α Arietis	3	3	22	3	3	2	43	2	23	2	4	1	44	1	20	1	0	0	41	0	21	0	1	23	38
3 N.	γ Ceti	3	3	59	3	40	3	20	3	0	2	41	2	21	1	57	1	37	1	18	0	58	0	38	0	19
4 N.	α Ceti	2·3	4	17	3	59	3	39	3	19	3	0	2	40	2	16	1	56	1	37	1	17	0	57	0	38
40 N.	β Persei	2·3	4	21	4	2	3	43	3	23	3	4	2	44	2	20	2	0	1	41	1	21	1	1	0	42
49 N.	α Persei	2·3	4	36	4	17	3	58	3	38	3	19	2	59	2	35	2	15	1	56	1	36	1	16	0	57
24 N.	η Tauri	3	5	2	4	43	4	23	4	3	3	44	3	24	3	0	2	40	2	21	2	1	1	41	1	22
14 S.	γ¹ Eridani	2·3	5	15	4	56	4	36	4	16	3	57	3	37	3	13	2	53	2	34	2	14	1	54	1	35
16 N.	α Tauri	1	5	50	5	31	5	11	4	51	4	32	4	12	3	49	3	29	3	10	2	50	2	30	2	11
46 N.	α Aurigæ	1	6	28	6	9	5	49	5	29	5	10	4	50	4	26	4	6	3	48	3	28	3	8	2	49
8 S.	β Orionis	1	6	30	6	11	5	51	5	31	5	12	4	52	4	28	4	8	3	50	3	30	3	10	2	51
28 N.	β Tauri	2	6	40	6	21	6	1	5	41	5	22	5	2	4	38	4	18	3	59	3	40	3	20	3	1
6 N.	γ Orionis	2	6	40	6	21	6	1	5	41	5	22	5	2	4	38	4	18	3	59	3	40	3	20	3	1
0 S.	δ Orionis	2	6	47	6	28	6	8	5	48	5	29	5	9	4	45	4	25	4	6	3	47	3	27	3	8
18 S.	α Leporis	3·4	6	49	6	30	6	10	5	50	5	31	5	11	4	47	4	27	4	8	3	49	3	29	3	10
1 S.	ε Orionis	2·3	6	51	6	32	6	12	5	52	5	33	5	13	4	49	4	29	4	10	3	51	3	31	3	12
34 S.	α Columbæ	2	6	57	6	38	6	18	5	58	5	39	5	19	4	55	4	35	4	16	3	57	3	37	3	18
7 N.	α Orionis	1	7	10	6	51	6	31	6	11	5	52	5	32	5	8	4	48	4	29	4	9	3	50	3	31
45 N.	β Aurigæ	2	7	11	6	52	6	32	6	12	5	53	5	33	5	9	4	49	4	30	4	10	3	51	3	32
18 S.	β Canis Maj.	2·3	7	39	7	20	7	0	6	40	6	21	6	1	5	37	5	17	4	58	4	38	4	18	3	59
23 N.	μ Geminor.	3	7	37	7	18	6	58	6	38	6	19	5	59	5	35	5	18	4	56	4	36	4	16	3	58
53 S.	α Argus	1	7	44	7	25	7	5	6	45	6	26	6	6	5	42	5	22	5	3	4	43	4	23	4	4
87 N.	51 Cephei	6	7	50	7	31	7	11	6	51	6	32	6	12	5	48	5	28	5	9	4	49	4	29	4	10
17 S.	α Canis Maj.	1	8	1	7	42	7	22	7	2	6	43	6	23	5	59	5	39	5	20	5	0	4	40	4	21
29 S.	ε Canis Maj.	2·3	8	16	7	57	7	37	7	17	6	58	6	38	6	14	5	54	5	35	5	15	4	55	4	36
22 N.	δ Geminor.	3·4	8	34	8	15	7	55	7	35	7	16	6	56	6	32	6	12	5	53	5	33	5	13	4	54
32 N.	α² Geminor.	1	8	48	8	29	8	9	7	49	7	30	7	10	6	46	6	26	6	7	5	47	5	27	5	8
6 N.	α Canis Min.	1·2	8	54	8	35	8	15	7	55	7	36	7	16	6	52	6	32	6	13	5	53	5	33	5	14
28 N.	β Geminor.	2	8	59	8	40	8	20	8	0	7	41	7	21	6	57	6	37	6	18	5	58	5	38	5	19
24 S.	15 Argus	3·4	9	24	9	5	8	45	8	25	8	6	7	46	7	22	7	2	6	43	6	23	6	3	5	44
47 S.	γ² Argus	2	9	28	9	9	8	49	8	29	8	10	7	50	7	26	7	6	6	47	6	27	6	7	5	48
59 S.	ε Argus	2	9	42	9	23	9	3	8	43	8	24	8	4	7	40	7	20	7	1	6	41	6	21	6	2
7 N.	ε Hydræ	4	10	2	9	43	9	23	9	3	8	44	8	24	8	0	7	40	7	21	7	1	6	41	6	22
49 N.	ι Ursæ Maj.	3·4	10	12	9	53	9	33	9	13	8	54	8	34	8	10	7	50	7	31	7	11	6	51	6	32
69 S.	β Argus	2	10	33	10	14	9	55	9	35	9	16	8	56	8	32	8	12	7	53	7	33	7	13	6	54
59 S.	ι Argus	2	10	35	10	16	9	57	9	37	9	18	8	58	8	34	8	14	7	55	7	35	7	15	6	56
8 S.	α Hydræ	2	10	42	10	23	10	3	9	44	9	25	9	5	8	41	8	21	8	2	7	42	7	22	7	3
52 N.	ι Ursæ Maj.	3	10	45	10	25	10	6	9	47	9	28	9	8	8	44	8	24	8	5	7	45	7	25	7	6
24 N.	ε Leonis	3	10	59	10	39	10	20	10	1	9	42	9	22	8	58	8	38	8	19	7	59	7	39	7	20
13 N.	α Leonis	1	11	22	11	3	10	43	10	24	10	4	9	45	9	21	9	1	8	42	8	22	8	2	7	42
21 N.	γ Leonis	2	11	33	11	14	10	54	10	34	10	15	9	56	9	32	9	12	8	53	8	33	8	13	7	54
64 S.	δ² Argus	2·3	11	59	11	40	11	20	11	0	10	41	10	21	9	58	9	38	9	19	8	59	8	39	8	20
59 S.	η Argus	1	12	1	11	42	11	22	11	2	10	43	10	23	10	0	9	40	9	21	9	1	8	41	8	22
57 N.	β Ursæ Maj.	2	12	14	11	55	11	35	11	15	10	56	10	36	10	12	9	53	9	34	9	14	8	54	8	35
63 N.	α Ursæ Maj.	1·2	12	16	11	57	11	37	11	17	10	58	10	38	10	14	9	55	9	36	9	16	8	56	8	37
21 N.	δ Leonis	3	12	28	12	9	11	49	11	29	11	10	10	50	10	26	10	7	9	48	9	28	9	8	8	49
14 S.	δ Hydræ	3·4	12	34	12	15	11	55	11	35	11	16	10	56	10	32	10	13	9	54	9	34	9	14	8	55
15 N.	β Leonis	2·3	13	3	12	44	12	24	12	4	11	45	11	25	11	1	10	41	10	22	10	2	9	43	9	24
55 N.	γ Ursæ Maj.	2	13	8	12	49	12	29	12	9	11	50	11	30	11	6	10	46	10	27	10	7	9	48	9	28
78 S.	β Chamæl.	5	13	31	13	12	12	52	12	32	12	13	11	53	11	29	11	9	10	50	10	30	10	10	9	52

Declination.		MARCH.												APRIL.											
		1.		6.		11.		16.		21.		26.		1.		6.		11.		16.		21.		26.	
°		H.	M.	H.	M.	H.	M.	H.	M.	H.	M.	H.	M.	H.	M.	H.	M.	H.	M.	H.	M.	H.	M.	H.	M.
62 S.	α^2 Crucis ...1	13	40	13	21	13	1	12	41	12	22	12	2	11	38	11	18	10	59	10	39	10	19	10	1
56 S.	γ Crucis ...2·3	13	45	13	26	13	6	12	46	12	27	12	7	11	43	11	23	11	4	10	44	10	24	10	6
23 S.	β Corvi....2·3	13	48	13	29	13	9	12	49	12	30	12	10	11	46	11	26	11	7	10	47	10	27	10	8
59 S.	β Crucis ...2	14	1	13	42	13	22	13	2	12	43	12	23	11	59	11	39	11	20	11	0	10	40	10	21
39 N.	12 Can. Ven. 2	14	11	13	52	13	32	13	12	12	53	12	33	12	9	11	49	11	30	11	10	10	50	10	31
10 S.	α Virginis..1	14	39	14	20	14	0	13	40	13	21	13	1	12	37	12	17	11	58	11	38	11	18	10	59
50 N.	η Ursæ Maj. 2·3	15	3	14	44	14	24	14	4	13	45	13	25	13	1	12	41	12	22	12	2	11	42	11	23
19 N.	η Bootis....3	15	9	14	50	14	30	14	10	13	51	13	31	13	7	12	47	12	28	12	8	11	48	11	29
60 S.	β Centauri .1	15	15	14	56	14	36	14	16	13	57	13	37	13	13	12	53	12	34	12	14	11	54	11	35
36 S.	δ Centauri .2	15	20	15	1	14	41	14	21	14	2	13	42	13	18	12	58	12	39	12	19	11	59	11	40
65 N.	α Draconis .3	15	22	15	3	14	43	14	23	14	4	13	44	13	20	13	0	12	41	12	21	12	1	11	42
20 N.	α Bootis ...1	15	31	15	12	14	52	14	32	14	13	13	53	13	29	13	9	12	50	12	30	12	10	11	51
60 S.	α^2 Centauri .1	15	51	15	32	15	12	14	52	14	33	14	13	13	49	13	29	13	10	12	50	12	30	12	11
28 N.	ι Bootis....3	16	0	15	41	15	21	15	1	14	42	14	22	13	58	13	38	13	19	12	59	12	39	12	20
15 S.	α^2 Libræ ...3	16	4	15	45	15	25	15	5	14	46	14	26	14	2	13	42	13	23	13	3	12	43	12	24
75 N.	β Ursæ Min.3	16	13	15	54	15	34	15	14	14	55	14	35	14	11	13	51	13	32	13	12	12	52	12	33
9 S.	β Libræ ...2·3	16	30	16	11	15	52	15	32	15	13	14	53	14	29	14	9	13	50	13	30	13	10	12	51
27 N.	α Coro. Bor. 2	16	49	16	30	16	10	15	51	15	32	15	12	14	48	14	28	14	9	13	49	13	29	13	10
7 N.	α Serpentis .2·3	16	58	16	39	16	19	15	59	15	41	15	21	14	57	14	37	14	18	13	58	13	38	13	19
78 N.	ζ Ursæ Min. 4	17	11	16	52	16	32	16	12	15	53	15	34	15	10	14	50	14	31	14	11	13	51	13	32
19 S.	β_1 Scorpii ..2	17	17	16	58	16	38	16	18	15	58	15	40	15	16	14	56	14	37	14	17	13	57	13	38
3 S.	δ Ophiuchi .3	17	27	17	8	16	48	16	28	16	9	15	50	15	26	15	6	14	47	14	27	14	7	13	48
26 S.	α Scorpii...1	17	41	17	22	17	2	16	42	16	23	16	3	15	40	15	20	15	1	14	41	14	21	14	2
62 N.	η Draconis .3	17	43	17	24	17	4	16	44	16	25	16	5	15	42	15	22	15	3	14	43	14	23	14	4
21 N.	β Herculis .2·3	17	45	17	26	17	6	16	46	16	27	16	7	15	44	15	24	15	5	14	45	14	25	14	6
69 S.	α Tria. Aust. 2	17	53	17	34	17	14	16	54	16	35	16	15	15	52	15	32	15	13	14	53	14	33	14	14
16 S.	η Ophiuchi .2·3	18	22	18	3	17	43	17	23	17	4	16	44	16	21	16	1	15	42	15	22	15	2	14	43
82 N.	ι Ursæ Min. 4	18	23	18	4	17	44	17	24	17	5	16	45	16	22	16	2	15	43	15	23	15	3	14	44
15 N.	α Herculis..3·4	18	29	18	10	17	50	17	30	17	11	16	51	16	28	16	8	15	49	15	29	15	9	14	50
89 S.	σ Octantis ..6	18	44	18	25	18	5	17	45	17	26	17	6	16	42	16	22	16	3	15	44	15	24	15	5
52 N.	β Draconis .2	18	48	18	29	18	9	17	49	17	30	17	10	16	46	16	26	16	7	15	48	15	28	15	9
13 N.	α Ophiuchi .2	18	49	18	30	18	10	17	50	17	31	17	11	16	47	16	27	16	8	15	49	15	29	15	10
52 N.	γ Draconis .2	19	14	18	55	18	35	18	15	17	56	17	36	17	12	16	52	16	33	16	13	15	54	15	35
21 S.	μ Sagittarii .3·4	19	26	19	7	18	47	18	27	18	8	17	48	17	24	17	4	16	45	16	25	16	6	15	47
87 N.	δ Ursæ Min. 3	19	43	19	24	19	4	18	44	18	25	18	5	17	41	17	21	17	2	16	42	16	22	16	3
39 N.	α Lyræ 1	19	53	19	34	19	14	18	54	18	35	18	15	17	51	17	31	17	12	16	52	16	32	16	13
33 N.	β Lyræ 3	20	5	19	46	19	26	19	6	18	47	18	27	18	3	17	43	17	24	17	4	16	44	16	25
14 N.	ζ Aquilæ ..3	20	19	20	0	19	40	19	20	19	1	18	41	18	17	17	57	17	38	17	18	16	58	16	39
3 N.	δ Aquilæ ..3·4	20	39	20	20	20	0	19	40	19	21	19	1	18	37	18	17	17	58	17	38	17	18	16	59
10 N.	γ Aquilæ ..3	21	1	20	41	20	21	20	1	19	42	19	22	18	58	18	38	18	19	17	59	17	39	17	20
8 N.	α Aquilæ ..1·2	21	4	20	45	20	25	20	5	19	46	19	26	19	2	18	42	18	23	18	3	17	43	17	24
6 N.	β Aquilæ...3·4	21	9	20	50	20	30	20	10	19	51	19	31	19	7	18	47	18	28	18	8	17	48	17	29
13 S.	α^2 Capricor. 3	21	35	21	16	20	56	20	36	20	17	19	57	19	33	19	13	18	54	18	34	18	14	17	55
57 S.	α Pavonis ..2	21	38	21	19	20	59	20	39	20	20	20	0	19	36	19	16	18	57	18	37	18	17	17	58
89 N.	λ Ursæ Min. 5	21	42	21	23	21	3	20	43	20	24	20	4	19	40	19	20	19	1	18	41	18	21	18	2
45 N.	α Cygni ...2	21	57	21	38	21	18	20	58	20	39	20	19	19	55	19	35	19	16	18	56	18	36	18	17
38 N.	61 Cygni ..5.6	22	21	22	1	21	42	21	23	21	3	20	43	20	19	19	59	19	40	19	20	19	0	18	41
30 N.	ζ Cygni ...3	22	27	22	7	21	47	21	27	21	9	20	49	20	25	20	5	19	46	19	26	19	6	18	47
62 N.	α Cephei...3	22	35	22	16	21	56	21	36	21	18	20	58	20	35	20	14	19	54	19	35	19	15	18	56
6 S.	β Aquarii ..3	22	43	22	24	22	4	21	44	21	26	21	6	20	42	20	22	20	3	19	43	19	23	19	4
70 N.	β Cephei ..3	22	47	22	28	22	8	21	48	21	30	21	10	20	46	20	26	20	7	19	47	19	27	19	8
9 N.	ι Pegasi ...2·3	22	57	22	38	22	18	21	58	21	40	21	20	20	56	20	36	20	17	19	57	19	37	19	18
1 S.	α Aquarii ..3	23	18	22	59	22	39	22	19	22	0	21	41	21	17	20	57	20	38	20	18	19	58	19	39
48 S	α Gruis ...2	23	18	22	59	22	39	22	19	22	0	21	41	21	17	20	57	20	38	20	18	19	58	19	39
10 N.	ζ Pegasi ...3	23	54	23	35	23	15	22	55	22	36	22	16	21	53	21	33	21	14	20	54	20	34	20	15
30 S.	α Pisc. Aust. 1	0	13	23	50	23	30	23	10	22	51	22	31	22	7	21	48	21	29	21	9	20	49	20	30
27 N.	β Pegasi ...2	0	20	0	1	23	37	23	17	22	58	22	38	22	14	21	55	21	36	21	16	20	56	20	37
14 N.	α Pegasi ...2	0	21	0	2	23	38	23	18	22	59	22	39	22	15	21	56	21	37	21	17	20	57	20	38
5 N.	ι Piscium ..4·5	0	56	0	37	0	17	23	53	23	34	23	14	22	50	22	31	22	12	21	52	21	32	21	13
77 N.	γ Cephei...3	0	57	0	38	0	18	23	54	23	35	23	15	22	51	22	32	22	13	21	53	21	33	21	14

Declination.		MAY.										JUNE.														
		1.		6.		11.		16.		21.		26.		1.		6.		11.		16.		21.		26.		
°		H.	M.	H.	M.	H.	M.	H.	M.	H.	M.	H.	M.	H.	M.	H.	M.	H.	M.	H.	M.	H.	M.	H.	M.	
28 N.	α Androm.	1·2	21	21	21	1	20	41	20	21	20	2	19	42	19	19	18	59	18	39	18	19	18	0	17	40
58 N.	β Cassiop.	2·3	21	22	21	2	20	42	20	22	20	3	19	43	19	20	19	0	18	40	18	20	18	1	17	41
14 N.	γ Pegasi	2·3	21	26	21	6	20	46	20	26	20	7	19	47	19	24	19	4	18	44	18	24	18	5	17	45
78 S.	β Hydri	3	21	39	21	19	20	59	20	39	20	20	20	0	19	37	19	17	18	57	18	37	18	18	17	58
43 S.	α Phœnicis	2	21	40	21	20	21	0	20	40	20	21	20	1	19	38	19	18	18	58	18	38	18	19	17	59
56 N.	α Cassiop.	3	21	53	21	33	21	13	20	53	20	34	20	14	19	51	19	31	19	11	18	51	18	32	18	12
19 S.	β Ceti	2·3	21	56	21	37	21	17	20	57	20	38	20	18	19	55	19	35	19	15	18	55	18	36	18	16
35 N.	β Androm.	2	22	21	22	1	21	42	21	22	21	3	20	43	20	20	20	0	19	40	19	20	19	1	18	41
88 N.	Pole Star	2 3	22	23	22	3	21	44	21	24	21	5	20	45	20	22	20	2	19	42	19	22	19	3	18	43
9 S.	β^1 Ceti	3	22	36	22	16	21	57	21	37	21	18	20	58	20	35	20	15	19	55	19	35	19	16	18	56
58 S.	α Eridani	1	22	52	22	32	22	12	21	53	21	34	21	14	20	51	20	31	20	11	19	51	19	32	19	12
23 N.	α Arietis	3	23	18	22	58	22	38	22	18	22	0	21	40	21	17	20	57	20	37	20	17	19	58	19	38
3 N.	γ Ceti	3	23	55	23	35	23	15	22	55	22	37	22	17	21	54	21	34	21	14	20	54	20	35	20	15
4 N.	α Ceti	2·3	0	18	23	54	23	34	23	14	22	55	22	35	22	12	21	53	21	33	21	13	20	54	20	34
40 N.	β Persei	2·3	0	22	0	2	23	38	23	18	22	59	22	39	22	16	21	56	21	37	21	17	20	58	20	38
49 N.	α Persei	2·3	0	37	0	17	23	53	23	33	23	14	22	54	22	31	22	11	21	52	21	32	21	13	20	53
24 N.	η Tauri	3	1	2	0	42	0	22	23	58	23	39	23	19	22	56	22	36	22	17	21	57	21	38	21	18
14 S.	γ_1 Eridani	2·3	1	15	0	55	0	35	0	15	23	52	23	32	23	9	22	49	22	30	22	10	21	51	21	31
16 N.	α Tauri	1	1	51	1	31	1	11	0	51	0	32	0	12	23	45	23	25	23	5	22	45	22	26	22	6
46 N.	α Aurigæ	1	2	29	2	9	1	49	1	29	1	10	0	50	0	27	0	7	23	43	23	23	23	4	22	44
8 S.	β Orionis	1	2	31	2	11	1	51	1	31	1	12	0	52	0	29	0	9	23	45	23	25	23	6	22	46
28 N.	β Tauri	2	2	41	2	21	2	1	1	41	1	22	1	2	0	39	0	19	23	55	23	35	23	16	22	56
6 N.	γ Orionis	2	2	41	2	21	2	1	1	41	1	22	1	2	0	39	0	19	23	55	23	35	23	16	22	56
0 S.	δ Orionis	2	2	48	2	28	2	8	1	48	1	29	1	9	0	46	0	26	0	6	23	42	23	23	23	3
18 S.	α Leporis	3·4	2	50	2	30	2	10	1	50	1	31	1	11	0	48	0	28	0	8	23	44	23	25	23	5
1 S.	ε Orionis	2·3	2	52	2	32	2	12	1	52	1	33	1	13	0	50	0	30	0	10	23	46	23	27	23	7
34 S.	α Columbæ	2	2	58	2	38	2	18	1	58	1	39	1	19	0	56	0	36	0	16	23	52	23	33	23	13
7 N.	α Orionis	1	3	11	2	51	2	31	2	11	1	52	1	32	1	9	0	49	0	29	0	9	23	46	23	26
45 N.	β Aurigæ	2	3	12	2	52	2	32	2	12	1	53	1	33	1	10	0	50	0	30	0	10	23	47	23	27
23 N.	μ Geminor.	3	3	38	3	18	2	58	2	38	2	19	1	59	1	36	1	16	0	58	0	38	0	17	23	53
18 S.	β Canis Maj.	2·3	3	40	3	20	3	0	2	40	2	21	2	1	1	38	1	18	0	58	0	38	0	19	23	55
53 S.	α Argus	1	3	45	3	25	3	5	2	45	2	26	2	6	1	43	1	23	1	3	0	43	0	23	0	4
87 N.	51 Cephei	6	3	51	3	31	3	11	2	51	2	32	2	12	1	49	1	29	1	9	0	49	0	29	0	10
17 S.	α Canis Maj.	1	4	1	3	42	3	22	3	2	2	43	2	23	2	0	1	40	1	20	1	0	0	41	0	21
29 S.	ε Canis Maj.	2·3	4	16	3	57	3	37	3	17	2	58	2	38	2	15	1	55	1	35	1	15	0	56	0	36
22 N.	δ Geminor.	3·4	4	34	4	15	3	55	3	35	3	16	2	56	2	33	2	13	1	53	1	33	1	14	0	54
32 N.	α^2 Geminor.	1	4	48	4	28	4	8	3	49	3	30	3	10	2	47	2	27	2	7	1	47	1	28	1	8
6 N.	α Canis Min.	1·2	4	54	4	34	4	14	3	55	3	36	3	16	2	53	2	33	2	13	1	53	1	34	1	14
28 N.	β Geminor.	2	4	59	4	39	4	19	3	59	3	41	3	21	2	58	2	38	2	18	1	58	1	39	1	19
24 S.	15 Argus	3·4	5	24	5	4	4	44	4	24	4	5	3	45	3	23	3	3	2	43	2	23	2	4	1	44
47 S.	γ^2 Argus	2	5	28	5	8	4	48	4	28	4	9	3	49	3	27	3	7	2	47	2	27	2	8	1	48
59 S.	ι Argus	2	5	42	5	22	5	2	4	42	4	23	4	3	3	41	3	21	3	1	2	41	2	22	2	2
7 N.	ι Hydræ	4	6	2	5	42	5	22	5	2	4	43	4	23	4	1	3	41	3	21	3	1	2	42	2	22
49 N.	ι Ursæ Maj.	3·4	4	12	5	52	5	32	5	12	4	53	4	33	4	11	3	51	3	31	3	11	2	52	2	32
69 S.	β Argus	2	6	34	6	14	5	54	5	34	5	15	4	55	4	32	4	12	3	53	3	33	3	14	2	54
59 S.	ι Argus	2	6	36	6	16	5	56	5	36	5	17	4	57	4	34	4	14	3	55	3	35	3	16	2	56
8 S.	α Hydræ	2	6	43	6	23	6	3	5	43	5	24	5	4	4	41	4	21	4	1	3	42	3	23	3	3
52 N.	ι Ursæ Maj.	3	6	46	6	26	6	6	5	46	5	27	5	7	4	44	4	24	4	4	3	45	3	26	3	6
24 N.	ε Leonis	3	7	0	6	40	6	20	6	0	5	41	5	21	4	58	4	38	4	18	3	59	3	30	3	20
13 N.	α Leonis	1	7	22	7	2	6	42	6	22	6	4	5	44	5	21	5	1	4	41	4	21	4	2	3	43
21 N.	γ Leonis	2	7	34	7	14	6	54	6	34	6	15	5	55	5	32	5	12	4	52	4	32	4	13	3	54
64 S.	θ^2 Argus	2·3	8	0	7	40	7	20	7	0	6	41	6	21	5	58	5	38	5	18	4	58	4	39	4	19
59 S.	η Argus	1	8	2	7	42	7	22	7	2	6	43	6	23	6	0	5	40	5	20	5	0	4	41	4	21
57 N.	β Ursæ Maj.	2	8	15	7	56	7	35	7	15	6	56	6	36	6	13	5	53	5	33	5	13	4	54	4	34
63 N.	α Ursæ Maj.	1·2	8	17	7	57	7	37	7	17	6	58	6	38	6	15	5	55	5	35	5	15	4	56	4	36
21 N.	δ Leonis	3	8	29	8	9	7	49	7	29	7	10	6	50	6	27	6	7	5	47	5	27	5	8	4	48
14 S.	δ Hydræ	3·4	8	35	8	15	7	55	7	35	7	16	6	56	6	33	6	13	5	53	5	33	5	14	4	54
15 N.	β Leonis	2·3	9	4	8	44	8	24	8	4	7	45	7	25	7	2	6	42	6	22	6	2	5	43	5	23
55 N.	γ Ursæ Maj.	2	9	8	8	49	8	29	8	9	7	50	7	30	7	7	6	47	6	27	6	7	5	48	5	28
78 S.	β Chamæl.	5	9	32	9	12	8	52	8	32	8	13	7	53	7	30	7	10	6	50	6	30	6	11	5	51

Declination.		MAY.												JUNE.											
		1.		6.		11.		16.		21.		26.		1.		6.		11.		16.		21.		26.	
°		H.	M.	H.	M.	H.	M.	H.	M.	H.	M.	H.	M.	H.	M.	H.	M.	H.	M.	H.	M.	H.	M.	H.	M.
62 S.	α^2 Crucis ...1	9	41	9	21	9	1	8	41	8	22	8	2	7	39	7	19	6	59	6	39	6	20	6	0
56 S.	γ Crucis ...2·3	9	46	9	26	9	6	8	46	8	27	8	7	7	44	7	24	7	4	6	44	6	25	6	5
23 S.	β Corvi....2·3	9	49	9	29	9	9	8	49	8	30	8	10	7	47	7	27	7	7	6	47	6	28	6	8
59 S.	β Crucis ...2	10	1	9	42	9	22	9	2	8	43	8	23	8	0	7	40	7	20	7	0	6	41	6	21
39 N.	12 Can.Ven. 2	10	11	9	52	9	32	9	12	8	53	8	33	8	10	7	50	7	30	7	10	6	51	6	31
10 S.	α Virginis..1	10	39	10	19	10	0	9	40	9	21	9	1	8	38	8	18	7	58	7	38	7	19	6	59
50 N.	η Ursæ Maj.2·3	11	3	10	43	10	23	10	3	9	45	9	25	9	2	8	42	8	22	8	2	7	43	7	23
19 N.	η Bootis....3	11	9	10	49	10	29	10	9	9	51	9	31	9	8	8	48	8	28	8	8	7	49	7	29
60 S.	β Centauri .1	11	15	10	55	10	35	10	15	9	57	9	37	9	14	8	54	8	34	8	14	7	55	7	35
36 S.	θ Centauri .2	11	20	11	0	10	40	10	20	10	1	9	42	9	19	8	59	8	39	8	19	8	0	7	40
65 N.	α Draconis .3	11	22	11	2	10	42	10	22	10	3	9	44	9	21	9	1	8	41	8	21	8	2	7	42
20 N.	α Bootis ...1	11	31	11	11	10	51	10	31	10	12	9	53	9	30	9	10	8	50	8	30	8	11	7	51
60 S.	α^2 Centauri .1	11	51	11	31	11	11	10	51	10	32	10	12	9	50	9	30	9	10	8	50	8	31	8	11
28 N.	ι Bootis ...3	12	0	11	40	11	20	11	0	10	41	10	21	9	59	9	39	9	19	8	59	8	40	8	20
15 S.	α^2 Libræ ...3	12	4	11	44	11	24	11	4	10	45	10	25	10	3	9	43	9	23	9	3	8	44	8	24
75 N.	β Ursæ Min.3	12	13	11	53	11	33	11	13	10	54	10	34	10	12	9	52	9	32	9	12	8	53	8	33
9 S.	β Libræ ...2·3	12	31	12	11	11	51	11	31	11	12	10	52	10	30	10	10	9	50	9	30	9	11	8	51
27 N.	α Coro. Bor. 2	12	50	12	30	12	10	11	50	11	31	11	11	10	48	10	28	10	8	9	49	9	30	9	10
7 N.	α Serpentis.2·3	12	59	12	39	12	19	11	59	11	40	11	20	10	57	10	37	10	17	9	57	9	39	9	19
78 N.	ζ Ursæ Min.4	13	12	12	52	12	32	12	12	11	53	11	33	11	10	10	50	10	30	10	10	9	52	9	32
19 S.	β^1 Scorpii ..2	13	18	12	58	12	38	12	18	11	59	11	39	11	16	10	56	10	36	10	16	9	58	9	38
3 S.	δ Ophiuchi.3	13	28	13	8	12	48	12	28	12	9	11	49	11	26	11	6	10	46	10	26	10	8	9	48
26 S.	α Scorpii...1	13	42	13	22	13	2	12	42	12	23	12	3	11	40	11	20	11	0	10	40	10	21	10	1
62 N.	η Draconis .3	13	44	13	24	13	4	12	44	12	25	12	5	11	42	11	22	11	2	10	42	10	23	10	3
21 N.	β Herculis .2·3	13	46	13	26	13	6	12	46	12	27	12	7	11	44	11	24	11	4	10	44	10	25	10	5
69 S.	α Tria. Aust.2	13	54	13	34	13	14	12	54	12	35	12	15	11	52	11	32	11	12	10	52	10	33	10	13
16 S.	η Ophiuchi .2·3	14	23	14	3	13	43	13	23	13	4	12	44	12	21	12	1	11	41	11	21	11	2	10	42
82 N.	ι Ursæ Min.4	14	24	14	4	13	44	13	24	13	5	12	45	12	22	12	2	11	42	11	22	11	4	10	44
15 N.	α Herculis. 3·4	14	30	14	10	13	50	13	30	13	11	12	51	12	28	12	8	11	48	11	28	11	10	10	50
89 S.	σ Octantis..6	14	45	14	25	14	5	13	45	13	26	13	6	12	43	12	23	12	3	11	43	11	24	11	4
52 N.	β Draconis .2	14	49	14	29	14	9	13	49	13	30	13	10	12	47	12	27	12	7	11	47	11	28	11	8
13 N.	α Ophiuchi.2	14	50	14	30	14	10	13	50	13	31	13	11	12	48	12	28	12	8	11	48	11	29	11	9
52 N.	γ Draconis .2	15	15	14	55	14	35	14	15	13	56	13	36	13	13	12	53	12	33	12	13	11	54	11	34
21 S.	μ Sagittarii.3·4	15	27	15	7	14	47	14	27	14	8	13	48	13	25	13	5	12	45	12	25	12	6	11	46
87 N.	δ Ursæ Min.3	15	43	15	24	15	4	14	44	14	25	14	5	13	42	13	22	13	2	12	42	12	23	12	3
39 N.	α Lyræ 1	15	53	15	34	15	14	14	54	14	35	14	15	13	52	13	32	13	12	12	52	12	33	12	13
33 N.	β Lyræ 3	16	5	15	46	15	26	15	6	14	47	14	27	14	4	13	44	13	24	13	4	12	45	12	25
14 N.	ζ Aquilæ ..3	16	19	16	0	15	40	15	20	15	1	14	41	14	18	13	58	13	38	13	18	12	59	12	39
3 N.	δ Aquilæ ..3·4	16	39	16	20	16	0	15	40	15	21	15	1	14	38	14	18	13	58	13	38	13	19	12	59
10 N.	γ Aquilæ ..3	17	0	16	40	16	20	16	0	15	42	15	22	14	59	14	39	14	19	13	59	13	40	13	20
8 N.	α Aquilæ ..1·2	17	4	16	44	16	24	16	4	15	46	15	26	15	3	14	43	14	23	14	3	13	44	13	24
6 N.	β Aquilæ ..3·4	17	9	16	49	16	29	16	9	15	51	15	31	15	8	14	48	14	28	14	8	13	49	13	29
13 S.	α^2 Capricor. 3	17	35	17	15	16	55	16	35	16	16	15	57	15	34	15	14	14	54	14	34	14	15	13	55
57 S.	α Pavonis ..2	17	38	17	18	16	58	16	38	16	19	16	0	15	37	15	17	14	57	14	37	14	18	13	58
89 N.	λ Ursæ Min.5	17	42	17	22	17	2	16	42	16	23	16	4	15	41	15	21	15	1	14	41	14	22	14	2
45 N.	α Cygni. ..2	17	57	17	37	17	17	16	57	16	38	16	18	15	56	15	36	15	16	14	56	14	37	14	17
38 N.	61 Cygni ..5·6	18	21	18	1	17	41	17	21	17	2	16	42	16	19	15	59	15	40	15	20	15	0	14	41
30 N.	ζ Cygni....3	18	27	18	7	17	47	17	27	17	8	16	48	16	25	16	5	15	45	15	26	15	6	14	47
62 N.	α Cephei...3	18	36	18	16	17	56	17	36	17	17	16	57	16	34	16	14	15	54	15	35	15	15	14	56
6 S.	β Aquarii ..3	18	44	18	24	18	4	17	44	17	25	17	5	16	42	16	22	16	2	15	43	15	23	15	4
70 N.	β Cephei...3	18	48	18	28	18	8	17	48	17	29	17	9	16	46	16	26	16	6	15	47	15	27	15	8
9 N.	ι Pegasi ...2·3	18	58	18	38	18	18	17	58	17	39	17	19	16	56	16	36	16	16	15	57	15	38	15	18
1 S.	α Aquarii ..3	19	19	18	59	18	39	18	19	18	0	17	40	17	17	16	57	16	37	16	17	15	58	15	39
48 S.	α Gruis....2	19	19	18	59	18	39	18	19	18	0	17	40	17	17	16	57	16	37	16	17	15	58	15	39
10 N.	ζ Pegasi ...3	19	55	19	35	19	15	18	55	18	36	18	16	17	53	17	33	17	13	16	53	16	34	16	15
30 S.	α Pisc. Aust.1	20	10	19	50	19	30	19	10	18	51	18	31	18	8	17	48	17	28	17	8	16	49	16	29
27 N.	β Pegasi ...2	20	17	19	57	19	37	19	17	18	58	18	38	18	15	17	55	17	35	17	15	16	56	16	36
14 N.	α Pegasi ...2	20	18	19	58	19	38	19	18	18	59	18	39	18	16	17	56	17	36	17	16	16	57	16	37
5 N.	ι Piscium..4·5	20	53	20	33	20	13	19	53	19	34	19	14	18	51	18	31	18	11	17	51	17	32	17	12
77 N.	γ Cephei...3	20	54	20	34	20	14	19	54	19	35	19	15	18	52	18	32	18	12	17	52	17	33	17	13

Declination.		JULY.												AUGUST.											
		1.		6.		11.		16.		21.		26		1.		6.		11.		16.		21.		26.	
°		H.	M.	H.	M.	H.	M.	H.	M.	H.	M.	H.	M.	H.	M.	H.	M.	H.	M.	H.	M.	H.	M.	H	M.
28 N.	α Androm. .1·2	17	20	17	1	16	41	16	21	16	2	15	43	15	19	14	59	14	40	14	20	14	1	13	41
58 N.	β Cassiop...2·3	17	21	17	2	16	42	16	22	16	3	15	44	15	20	15	0	14	41	14	21	14	2	13	42
14 N.	γ Pegasi...2·3	17	25	17	6	16	46	16	26	16	7	15	48	15	24	15	4	14	45	14	25	14	6	13	46
78 S.	β Hydri ...3	17	38	17	19	16	59	16	39	16	20	16	1	15	37	15	17	14	58	14	38	14	19	13	59
43 S.	α Phœnicis.2	17	39	17	20	17	0	16	40	16	21	16	2	15	38	15	18	14	59	14	39	14	20	14	0
56 N.	α Cassiop...3	17	52	17	33	17	13	16	53	16	34	16	14	15	51	15	31	15	12	14	52	14	33	14	13
19 S.	β Ceti 2·3	17	56	17	37	17	17	16	57	16	38	16	18	15	55	15	35	15	16	14	56	14	37	14	17
35 N.	β Androm. .2	18	21	18	2	17	42	17	22	17	3	16	43	16	20	16	0	15	41	15	21	15	2	14	43
88 N.	Pole Star...2·3	18	23	18	4	17	44	17	24	17	5	16	45	16	22	16	1	15	43	15	23	15	4	14	45
9 S.	δ^1 Ceti 3	18	36	18	17	17	57	17	37	17	18	16	58	16	34	16	14	15	56	15	36	15	17	14	58
58 S.	α Eridani ..1	18	52	18	33	18	13	17	53	17	34	17	14	16	50	16	30	16	11	15	52	15	33	15	13
23 N.	α Arietis ..3	19	18	18	59	18	39	18	19	18	0	17	40	17	16	16	56	16	37	16	17	15	59	15	39
3 N.	γ Ceti 3	19	55	19	36	19	16	18	56	18	37	18	17	17	53	17	33	17	14	16	54	16	36	16	16
4 N.	α Ceti 2·3	20	14	19	55	19	35	19	15	18	56	18	36	18	12	17	52	17	33	17	13	16	54	16	34
40 N.	β Persei ...2·3	20	18	19	59	19	39	19	19	19	0	18	40	18	16	17	56	17	37	17	17	16	58	16	38
49 N.	α Persei ...2·3	20	33	20	14	19	54	19	34	19	15	18	55	18	31	18	11	17	52	17	32	17	13	16	53
24 N.	η Tauri....3	20	58	20	39	20	19	19	59	19	40	19	20	18	56	18	36	18	17	17	57	17	38	17	18
14 S.	γ^1 Eridani ..2·3	21	11	20	52	20	32	20	12	19	53	19	33	19	9	18	49	18	30	18	10	17	51	17	31
16 N.	α Tauri....1	21	47	21	28	21	8	20	48	20	29	20	9	19	45	19	25	19	6	18	46	18	27	18	7
46 N.	α Aurigæ ..1	22	24	22	5	21	46	21	26	21	7	20	47	20	23	20	3	19	44	19	24	19	5	18	45
8 S.	β Orionis ..1	22	26	22	7	21	48	21	28	21	9	20	49	20	25	20	5	19	46	19	26	19	7	18	47
28 N.	β Tauri... 2	22	36	22	17	21	57	21	38	21	19	20	59	20	35	20	15	19	56	19	36	19	17	18	57
6 N.	γ Orionis ..2	22	36	22	17	21	57	21	38	21	19	20	59	20	35	20	15	19	56	19	36	19	17	18	57
0 S.	δ Orionis ..2	22	43	22	24	22	4	21	45	21	26	21	6	20	42	20	22	20	3	19	43	19	24	19	4
18 S.	α Leporis ..3·4	22	45	22	26	22	6	21	47	21	28	21	8	20	44	20	24	20	5	19	45	19	26	19	6
1 S.	ε Orionis ..2·3	22	47	22	28	22	8	21	49	21	31	21	10	20	46	20	26	20	7	19	47	19	28	19	8
34 S.	α Columbæ.2	22	53	22	34	22	14	21	55	21	36	21	16	20	52	20	32	20	13	19	53	19	34	19	14
7 N.	α Orionis ..1	23	6	22	47	22	27	22	7	21	49	21	29	21	5	20	45	20	26	20	6	19	47	19	27
45 N.	β Aurigæ ..2	23	7	22	48	22	28	22	8	21	50	21	30	21	6	20	46	20	27	20	7	19	48	19	28
23 N.	μ Geminor. 3	23	33	23	14	22	54	22	34	22	16	21	56	21	32	21	12	20	53	20	33	20	14	19	54
18 S.	β Canis Maj. 2·3	23	35	23	16	22	56	22	36	22	17	21	57	21	34	21	14	20	55	20	35	20	16	19	56
53 S.	α Argus ...1	23	40	23	21	23	1	22	41	22	22	22	2	21	39	21	19	21	0	20	40	20	21	20	1
87 N.	51 Cephei.. 6	23	46	23	27	23	7	22	47	22	28	22	8	21	45	21	25	21	6	20	46	20	27	20	7
17 S.	α Canis Maj.1	0	1	23	38	23	18	22	58	22	39	22	19	21	56	21	36	21	17	20	57	20	38	20	18
29 S.	ε Canis Maj.2·3	0	16	23	53	23	33	23	13	22	54	22	34	22	10	21	51	21	32	21	12	20	53	20	33
22 N.	δ Geminor. 3·4	0	34	0	15	23	51	23	31	23	12	22	52	22	28	22	9	21	50	21	30	21	11	20	51
32 N.	α^2 Geminor. 1	0	48	0	29	0	9	23	45	23	26	23	6	22	42	22	22	22	3	21	43	21	25	21	5
6 N.	α Canis Min.1·2	0	54	0	35	0	15	23	51	23	32	23	12	22	48	22	28	22	9	21	50	21	31	21	11
28 N.	β Geminor. 2	0	59	0	40	0	20	0	0	23	36	23	17	22	53	22	33	22	14	21	54	21	36	21	16
24 S.	15 Argus...3·4	1	24	1	5	0	45	0	25	0	6	23	42	23	18	22	58	22	39	22	19	22	0	21	40
47 S.	γ^2 Argus ...2	1	28	1	9	0	49	0	29	0	10	23	46	23	22	23	2	22	43	22	23	22	4	21	44
59 S.	ε Argus ...2	1	42	1	23	1	3	0	43	0	24	0	4	23	36	23	16	22	57	22	37	22	18	21	58
7 N.	ε Hydræ...4	2	2	1	43	1	23	1	3	0	44	0	24	23	56	23	36	23	17	22	57	22	38	22	18
49 N.	ι Ursæ Maj. 3·4	2	12	1	53	1	33	1	13	0	54	0	34	0	10	23	46	23	27	23	7	22	48	22	28
69 S.	β Argus ...2	2	34	2	15	1	55	1	35	1	16	0	56	0	32	0	12	23	49	23	29	23	10	22	50
59 S.	ι Argus....2	2	36	2	17	1	57	1	37	1	18	0	58	0	34	0	14	23	51	23	31	23	12	22	52
8 S.	α Hydræ...2	2	43	2	24	2	4	1	44	1	25	1	5	0	41	0	21	0	2	23	38	23	19	22	59
52 N.	δ Ursæ Maj. 3	2	46	2	27	2	7	1	47	1	28	1	8	0	44	0	24	0	5	23	41	23	22	23	2
24 N.	ε Leonis ...3	3	0	2	41	2	21	2	1	1	42	1	22	0	58	0	38	0	19	23	55	23	36	23	16
13 N.	α Leonis ...1	3	23	3	4	2	44	2	24	2	5	1	45	1	21	1	1	0	42	0	22	0	3	23	39
21 N.	γ Leonis...2	3	34	3	15	2	55	2	35	2	16	1	56	1	32	1	12	0	53	0	33	0	14	23	50
64 S.	δ^2 Argus ...2·3	3	59	3	41	3	21	3	1	2	42	2	22	1	58	1	38	1	19	0	59	0	40	0	20
59 S.	π Argus ...1	4	1	3	43	3	23	3	3	2	44	2	24	2	0	1	40	1	21	1	1	0	42	0	22
57 N.	β Ursæ Maj. 2	4	14	3	56	3	36	3	16	2	57	2	37	2	13	1	53	1	34	1	14	0	55	0	35
63 N.	α Ursæ Maj. 1·2	4	16	3	58	3	38	3	18	2	59	2	39	2	15	1	55	1	36	1	16	0	57	0	37
21 N.	δ Leonis ...3	4	28	4	10	3	50	3	30	3	11	2	51	2	27	2	7	1	48	1	28	1	9	0	49
14 S.	δ Hydræ...3·4	4	34	4	16	3	56	3	36	3	17	2	56	2	33	2	13	1	54	1	34	1	15	0	55
15 N.	β Leonis ...2·3	5	3	4	44	4	24	4	4	3	46	3	26	3	2	2	42	2	23	2	3	1	44	1	24
55 N.	γ Ursæ Maj. 2	5	8	4	49	4	29	4	9	3	51	3	31	3	7	2	47	2	28	2	8	1	49	1	29
78 S.	β Chamæl. .5	5	31	5	12	4	52	4	32	4	14	3	54	3	30	3	10	2	51	2	31	2	12	1	52

Declination.		JULY.												AUGUST.											
		1.		6.		11.		16.		21.		26.		1.		6.		11.		16.		21.		26.	
°		H.	M.	H.	M.	H.	M.	H.	M.	H.	M.	H.	M.	H.	M.	H.	M.	H.	M.	H.	M.	H.	M.	H.	M.
62 S.	α^2 Crucis ...1	5	40	5	21	5	1	4	41	4	22	4	2	3	39	3	19	3	0	2	40	2	21	2	1
56 S.	γ Crucis ...2·3	5	45	5	26	5	6	4	46	4	27	4	7	3	44	3	24	3	5	2	45	2	26	2	6
23 S.	β Corvi....2·3	5	48	5	29	5	9	4	49	4	30	4	10	3	47	3	27	3	8	2	48	2	29	2	9
59 S.	β Crucis ...2	6	1	5	42	5	22	5	2	4	43	4	23	3	59	3	40	3	21	3	1	2	42	2	22
39 N.	12 Can. Ven. 2	6	11	5	52	5	32	5	12	4	53	4	33	4	9	3	50	3	31	3	11	2	52	2	32
10 S.	α Virginis..1	6	39	6	20	6	0	5	40	5	21	5	1	4	37	4	17	3	59	3	39	3	20	3	0
50 N.	η Ursæ Maj. 2·3	7	3	6	44	6	24	6	4	5	45	5	25	5	1	4	41	4	22	4	2	3	44	3	24
19 N.	η Bootis....3	7	9	6	50	6	30	6	10	5	51	5	31	5	7	4	47	4	28	4	8	3	50	3	30
60 S.	β Centauri .1	7	15	6	56	6	36	6	16	5	57	5	37	5	13	4	53	4	34	4	14	3	56	3	36
36 S.	θ Centauri .2	7	20	7	1	6	41	6	21	6	2	5	42	5	18	4	58	4	39	4	19	4	0	3	41
65 N.	α Draconis .3	7	22	7	3	6	43	6	23	6	4	5	44	5	20	5	0	4	41	4	21	4	2	3	42
20 N.	α Bootis ...1	7	31	7	12	6	52	6	32	6	13	5	53	5	29	5	9	4	50	4	30	4	11	3	52
60 S.	α^3 Centauri .1	7	51	7	32	7	12	6	52	6	33	6	13	5	49	5	29	5	10	4	50	4	31	4	11
28 N.	ι Bootis....3	8	0	7	41	7	21	7	1	6	42	6	22	5	58	5	38	5	19	4	59	4	40	4	20
15 S.	α^2 Libræ ...3	8	4	7	45	7	25	7	5	6	46	6	26	6	2	5	42	5	23	5	3	4	44	4	24
75 N.	β Ursæ Min.3	8	13	7	54	7	34	7	14	6	55	6	35	6	11	5	51	5	32	5	12	4	53	4	33
9 S.	β Libræ ...2·3	8	31	8	12	7	52	7	32	7	13	6	53	6	29	6	9	5	50	5	30	5	11	4	51
27 N.	α Coro. Bor. 2	8	50	8	31	8	11	7	51	7	32	7	12	6	48	6	28	6	9	5	49	5	30	5	10
7 N.	α Serpentis .2·3	8	59	8	40	8	20	8	0	7	41	7	21	6	57	6	37	6	18	5	58	5	39	5	19
78 N.	ζ Ursæ Min. 4	9	12	8	53	8	33	8	13	7	54	7	34	7	10	6	50	6	31	6	11	5	52	5	32
19 S.	β^1 Scorpii ..2	9	18	8	59	8	39	8	19	8	0	7	40	7	16	6	56	6	37	6	17	5	58	5	38
3 S.	δ Ophiuchi.3	9	28	9	9	8	49	8	29	8	10	7	50	7	26	7	6	6	47	6	27	6	8	5	48
26 S	α Scorpii...1	9	42	9	23	9	3	8	43	8	24	8	4	7	40	7	20	7	1	6	41	6	22	6	2
62 N.	η Draconis .3	9	44	9	25	9	5	8	45	8	26	8	6	7	42	7	22	7	3	6	43	6	24	6	4
21 N.	β Herculis .2·3	9	46	9	27	9	7	8	47	8	28	8	8	7	44	7	24	7	5	6	45	6	26	6	6
69 S.	α Tria. Aust. 2	9	54	9	35	9	15	8	55	8	36	8	16	7	52	7	32	7	13	6	53	6	34	6	14
16 S.	η Ophiuchi .2·3	10	22	10	3	9	44	9	24	9	5	8	45	8	21	8	1	7	42	7	22	7	3	6	43
82 N.	ι Ursæ Min. 4	10	23	10	4	9	45	9	25	9	6	8	46	8	22	8	2	7	43	7	23	7	4	6	44
15 N.	α Herculis..3·4	10	29	10	10	9	51	9	31	9	12	8	52	8	28	8	8	7	49	7	29	7	10	6	50
89 S.	σ Octantis ..6	10	44	10	25	10	5	9	46	9	27	9	7	8	43	8	23	8	4	7	44	7	25	7	5
52 N.	β Draconis .2	10	48	10	29	10	9	9	50	9	31	9	11	8	47	8	27	8	8	7	48	7	29	7	9
13 N.	α Ophiuchi .2	10	49	10	30	10	10	9	51	9	32	9	12	8	48	8	28	8	9	7	49	7	30	7	10
52 N.	γ Draconis .2	11	14	10	55	10	35	10	15	9	57	9	37	9	13	8	53	8	34	8	14	7	55	7	35
21 S.	μ Sagittarii .3·4	11	26	11	7	10	47	10	27	10	9	9	49	9	25	9	5	8	46	8	26	8	7	7	47
87 N.	δ Ursæ Min. 3	11	43	11	24	11	4	10	44	10	25	10	5	9	42	9	22	9	3	8	43	8	24	8	4
39 N.	α Lyræ 1	11	53	11	34	11	14	10	54	10	35	10	15	9	52	9	32	9	13	8	53	8	34	8	14
33 N.	β Lyræ 3	12	5	11	46	11	26	11	6	10	47	10	27	10	4	9	44	9	25	9	5	8	46	8	26
14 N.	ζ Aquilæ ..3	12	19	12	0	11	40	11	20	11	1	10	41	10	18	9	58	9	39	9	19	9	0	8	40
3 N.	δ Aquilæ ..3·4	12	39	12	20	12	0	11	40	11	21	11	1	10	38	10	18	9	59	9	39	9	20	9	0
10 N.	γ Aquilæ ..3	13	0	12	41	12	21	12	1	11	42	11	22	10	58	10	38	10	19	9	59	9	41	9	21
8 N.	α Aquilæ ..1·2	13	4	12	45	12	25	12	5	11	46	11	26	11	2	10	42	10	23	10	3	9	45	9	25
6 N.	β Aquilæ...3·4	13	9	12	50	12	30	12	10	11	51	11	31	11	7	10	47	10	28	10	8	9	50	9	30
13 S.	α^2 Capricor. 3	13	35	13	16	12	56	12	36	12	17	11	57	11	33	11	13	10	54	10	34	10	15	9	56
57 S.	α Pavonis ..2	13	38	13	19	12	59	12	39	12	20	12	0	11	36	11	16	10	57	10	37	10	18	9	59
89 N.	λ Ursæ Min. 5	13	42	13	23	13	3	12	43	12	24	12	4	11	40	11	20	11	1	10	41	10	22	10	3
45 N.	α Cygni ...2	13	57	13	38	13	18	12	58	12	39	12	19	11	55	11	35	11	16	10	56	10	37	10	17
38 N.	61 Cygni ..5.6	14	21	14	2	13	42	13	22	13	3	12	43	12	19	11	59	11	40	11	20	11	1	10	41
30 N.	ζ Cygni ...3	14	27	14	8	13	48	13	28	13	9	12	49	12	25	12	5	11	46	11	26	11	7	10	47
62 N.	α Cephei...3	14	36	14	17	13	57	13	37	13	18	12	58	12	34	12	14	11	55	11	35	11	16	10	56
6 S.	β Aquarii ..3	14	44	14	25	14	5	13	45	13	26	13	6	12	42	12	22	12	3	11	43	11	24	11	4
70 N.	β Cephei ..3	14	48	14	29	14	9	13	49	13	30	13	10	12	46	12	26	12	7	11	47	11	28	11	8
9 N.	ι Pegasi ...2·3	14	58	14	39	14	19	13	59	13	40	13	20	12	56	12	36	12	17	11	57	11	38	11	18
1 S.	α Aquarii ..3	15	19	15	0	14	40	14	20	14	1	13	41	13	17	12	57	12	38	12	18	11	59	11	39
48 S.	α Gruis ...2	15	19	15	0	14	40	14	20	14	1	13	41	13	17	12	57	12	38	12	18	11	59	11	39
10 N.	ζ Pegasi ...3	15	58	15	40	15	20	15	0	14	41	14	21	13	57	13	37	13	18	12	58	12	39	12	19
30 S.	α Pisc. Aust.1	16	9	15	51	15	31	15	11	14	52	14	32	14	8	13	48	13	29	13	9	12	50	12	30
27 N.	β Pegasi ...2	16	16	15	57	15	38	15	18	14	59	14	39	14	15	13	55	13	36	13	16	12	57	12	37
14 N.	α Pegasi ...2	16	17	15	58	15	39	15	19	15	0	14	40	14	16	13	56	13	37	13	17	12	58	12	38
5 N.	ι Piscium ..4·5	16	52	16	33	16	14	15	54	15	35	15	15	14	51	14	31	14	12	13	52	13	33	13	13
77 N.	γ Cephei...3	16	53	16	34	16	15	15	55	15	36	15	16	14	52	14	32	14	13	13	53	13	34	13	14

Declination.		SEPTEMBER.										OCTOBER.													
		1.		6.		11.		16.		21.		26.		1.		6.		11.		16.		21.		26.	
°		H.	M.	H.	M.	H.	M.	H.	M.	H.	M.	H.	M.	H.	M.	H.	M.	H.	M.	H.	M.	H.	M.	H.	M.
28 N.	α Androm.. 1·2	13	17	12	57	12	37	12	18	11	58	11	38	11	19	10	59	10	39	10	19	10	0	9	40
58 N.	β Cassiop...2·3	13	18	12	58	12	38	12	19	11	59	11	39	11	20	11	0	10	40	10	20	10	1	9	41
14 N.	γ Pegasi ...2·3	13	22	13	2	12	42	12	23	12	3	11	43	11	24	11	4	10	44	10	24	10	5	9	45
78 S.	β Hydri ...3	13	35	13	15	12	55	12	36	12	16	11	56	11	37	11	17	10	57	10	37	10	18	9	58
43 S.	α Phœnicis 2	13	36	13	16	12	56	12	37	12	17	11	57	11	38	11	18	10	58	10	38	10	19	9	59
56 N.	α Cassiop...3	13	49	13	29	13	9	12	50	12	30	12	10	11	51	11	31	11	11	10	51	10	32	10	12
19 S.	β Ceti 2·3	13	53	13	33	13	13	12	54	12	34	12	14	11	55	11	35	11	15	10	55	10	36	10	16
35 N.	β Androm. 2	14	18	13	58	13	38	13	19	12	59	12	39	12	20	12	0	11	40	11	20	11	1	10	41
88 N.	Pole Star...2·3	14	20	14	0	13	40	13	21	13	1	12	41	12	22	12	2	11	42	11	22	11	3	10	43
9 S.	β^1 Ceti 3	14	33	14	13	13	53	13	34	13	14	12	54	12	35	12	15	11	55	11	35	11	16	10	56
58 S.	α Eridani ..1	14	49	14	29	14	9	13	50	13	30	13	10	12	51	12	31	12	11	11	51	11	32	11	12
23 N.	α Arietis...3	15	15	14	55	14	35	14	16	13	56	13	36	13	17	12	57	12	37	12	17	11	58	11	38
3 N.	γ Ceti 3	15	52	15	32	15	12	14	53	14	33	14	13	13	54	13	34	13	14	12	54	12	35	12	15
4 N.	α Ceti 2·3	16	10	15	51	15	31	15	12	14	52	14	32	14	13	13	53	13	33	13	13	12	54	12	34
40 N.	β Persei ...2·3	16	14	15	55	15	35	15	16	14	56	14	36	14	17	13	57	13	37	13	17	12	58	12	38
49 N.	α Persei ...2·3	16	29	16	9	15	50	15	31	15	11	14	51	14	32	14	12	13	52	13	32	13	13	12	53
24 N.	η Tauri....3	16	54	16	34	16	15	15	56	15	36	15	16	14	57	14	37	14	17	13	57	13	38	13	18
14 S.	γ^1 Eridani ..2·3	17	7	16	47	16	28	16	9	15	49	15	29	15	10	14	50	14	30	14	10	13	51	13	31
16 N.	α Tauri....1	17	43	17	23	17	3	16	44	16	24	16	4	15	46	15	26	15	6	14	46	14	27	14	7
46 N.	α Aurigæ ..1	18	21	18	1	17	41	17	22	17	2	16	42	16	23	16	3	15	44	15	24	15	5	14	45
8 S.	β Orionis ..1	18	23	18	3	17	43	17	24	17	4	16	44	16	25	16	5	15	46	15	26	15	7	14	47
28 N.	β Tauri....2	18	33	18	13	17	53	17	34	17	14	16	54	16	35	16	15	15	56	15	36	15	17	14	57
6 N.	γ Orionis ..2	18	33	18	13	17	54	17	34	17	14	16	54	16	35	16	15	15	56	15	36	15	17	14	57
0 S.	δ Orionis ..2	18	40	18	20	18	0	17	41	17	21	17	1	16	42	16	22	16	2	14	43	15	34	15	4
18 S.	α Leporis ..3·4	18	42	18	22	18	2	17	43	17	23	17	3	16	44	16	24	16	4	15	45	15	26	15	6
1 S.	ι Orionis ..2·3	18	44	18	24	18	4	17	45	17	25	17	5	16	46	16	26	16	6	15	47	15	28	15	8
34 S.	α Columbæ 2	18	50	18	30	18	10	17	51	17	31	17	11	16	52	16	32	16	12	15	53	15	34	15	14
7 N.	α Orionis ..1	19	3	18	43	18	23	18	4	17	44	17	24	17	5	16	45	16	25	16	5	15	47	15	27
45 N.	β Aurigæ ..2	19	4	18	44	18	24	18	5	17	45	17	25	17	6	16	46	16	26	16	6	15	48	15	28
23 N.	μ Geminor.3	19	30	19	10	18	50	18	31	18	11	17	51	17	32	17	12	16	52	16	32	16	13	15	54
18 S.	β Canis Maj.2·3	19	32	19	12	18	52	18	33	18	13	17	53	17	34	17	14	16	54	16	34	16	15	15	55
53 S.	ω Argus ...1	19	37	19	17	18	57	18	38	18	18	17	58	17	39	17	19	16	59	16	39	16	20	16	0
87 N.	51 Cephei ..6	19	43	19	23	19	3	18	44	18	24	18	4	17	45	17	25	17	5	16	45	16	26	16	6
17 S.	α Canis Maj.1	19	54	19	34	19	14	18	55	18	35	18	15	17	56	17	36	17	16	16	56	16	37	16	17
29 S.	ε Canis Maj.2·3	20	9	19	49	19	29	19	10	18	50	18	30	18	11	17	51	17	31	17	11	16	52	16	32
22 N.	δ Geminor .3·4	20	27	20	7	19	47	19	28	19	8	18	48	18	29	18	9	17	49	17	29	17	10	16	50
32 N.	α Geminor..1	20	41	20	21	20	1	19	42	19	22	19	2	18	43	18	23	18	3	17	43	17	24	17	4
6 N.	α Canis Min.1·2	20	47	20	27	20	7	19	48	19	28	19	8	18	49	18	29	18	9	17	49	17	30	17	10
28 N.	β Geminor. .2	20	52	20	32	20	12	19	53	19	33	19	13	18	54	18	34	18	14	17	54	17	35	17	15
24 S.	15 Argus ...3·4	21	17	20	57	20	37	20	18	19	58	19	38	19	19	18	59	18	39	18	19	18	0	17	40
47 S.	γ^2 Argus ...2	21	21	21	1	20	41	20	22	20	2	19	42	19	23	19	3	18	43	18	23	18	4	17	44
59 S.	ι Argus ...2	21	35	21	15	20	55	20	36	20	16	19	56	19	37	19	17	18	57	18	37	18	18	17	58
7 N.	ε Hydræ...4	21	55	21	35	21	15	20	56	20	36	20	16	19	57	19	37	19	17	18	57	18	38	18	18
49 N.	ι Ursæ Maj. 3·4	22	5	21	45	21	25	21	6	20	46	20	26	20	7	19	47	19	27	19	7	18	48	18	28
69 S.	β Argus ...2	22	26	22	6	21	47	21	28	21	8	20	48	20	29	20	9	19	49	19	29	19	10	18	50
59 S.	ι Argus....2	22	28	22	8	21	49	21	30	21	10	20	50	20	31	20	11	19	51	19	31	19	12	18	52
8 S.	α Hydræ...2	22	35	22	15	21	56	21	37	21	17	20	57	20	38	20	18	19	58	19	38	19	19	18	59
52 N.	ℓ Ursæ Maj. 3	22	38	22	18	21	59	21	40	21	20	21	0	20	41	20	21	20	1	19	41	19	22	19	2
24 N.	ι Leonis ...3	22	52	22	32	22	13	21	54	21	34	21	14	20	55	20	35	20	15	19	55	19	36	19	16
13 N.	κ Leonis ...1	23	15	22	55	22	35	22	16	21	56	21	37	21	18	20	58	20	38	20	18	19	59	19	39
21 N.	γ Leonis ...2	23	26	23	6	22	46	22	27	22	7	21	48	21	29	21	9	20	49	20	29	20	10	19	50
64 S.	ℓ^2 Argus ...2·3	23	52	23	32	23	12	22	53	22	33	21	13	21	54	21	35	21	15	20	55	20	36	20	16
59 S.	η Argus....1	23	54	23	34	23	14	22	55	22	35	22	15	21	56	21	37	21	17	20	57	20	38	20	18
57 N.	β Ursæ Maj. 2	0	11	23	47	23	27	23	8	22	48	22	28	22	9	21	50	21	30	21	10	20	51	20	31
63 N.	α Ursæ Maj. 1·2	0	13	23	49	23	29	23	10	22	50	22	30	22	11	21	52	21	32	21	12	20	53	20	33
21 N.	δ Leonis ...3	0	25	0	5	23	41	23	22	23	2	22	42	22	23	22	4	21	44	21	24	21	5	20	45
14 S.	δ Hydræ...3·4	0	31	0	11	23	47	23	28	23	8	22	48	22	29	22	10	21	50	21	30	21	11	20	51
15 N.	β Leonis ...2·3	1	0	0	40	0	20	0	1	23	37	23	17	22	58	22	38	22	18	21	58	21	40	21	20
55 N.	γ Ursæ Maj. 2	1	5	0	45	0	25	0	6	23	42	23	22	23	3	22	43	22	23	22	3	21	45	21	25
78 S.	β Chamæl. .5	1	28	1	8	0	48	0	29	0	9	23	45	23	26	23	6	22	46	22	26	22	8	21	48

Declination.		SEPTEMBER.										OCTOBER.													
		1.		6.		11.		16.		21.		26.		1.		6.		11.		16.		21.		26.	
°		H.	M.	H.	M.	H.	M.	H.	M.	H.	M.	H.	M.	H.	M.	H.	M.	H.	M.	H.	M.	H.	M.	H.	M.
62 S.	α^2 Crucis ...1	1	37	1	17	0	57	0	38	0	18	23	54	23	35	23	15	22	55	22	35	22	16	21	56
56 S.	γ Crucis ...2·3	1	42	1	22	1	2	0	43	0	23	23	59	23	40	23	20	23	0	22	40	22	21	22	1
23 S.	β Corvi....2·3	1	45	1	25	1	5	0	46	0	26	0	6	23	43	23	23	23	3	22	43	22	24	22	4
59 S.	β Crucis ...2	1	58	1	38	1	18	0	59	0	39	0	19	0	0	23	36	23	16	22	56	22	37	22	17
39 N.	12 Can. Ven. 2	2	8	1	48	1	28	1	9	0	49	0	29	0	10	23	46	23	26	23	6	22	47	22	27
10 S.	α Virginis..1	2	36	2	16	1	56	1	37	1	17	0	57	0	38	0	18	23	54	23	34	23	15	22	55
50 N.	η Ursæ Maj. 2·3	3	0	2	40	2	20	2	1	1	41	1	21	1	2	0	42	0	22	0	2	23	39	23	19
19 N.	η Bootis....3	3	6	2	46	2	26	2	7	1	47	1	27	1	8	0	48	0	28	0	8	23	45	23	25
60 S.	β Centauri .1	3	12	2	52	2	32	2	13	1	53	1	33	1	14	0	54	0	34	0	14	23	51	23	31
36 S.	θ Centauri .2	3	17	2	57	2	37	2	18	1	58	1	38	1	19	0	59	0	39	0	19	0	0	23	36
65 N.	α Draconis .3	3	19	2	59	2	39	2	20	2	0	1	40	1	21	1	1	0	41	0	21	0	2	23	38
20 N.	α Bootis ...1	3	28	3	8	2	48	2	29	2	9	1	49	1	30	1	10	0	50	0	30	0	11	23	47
60 S.	α^2 Centauri .1	3	48	3	28	3	8	2	49	2	29	2	9	1	50	1	30	1	10	0	50	0	31	0	11
28 N.	ι Bootis ...3	3	57	3	37	3	17	2	58	2	38	2	18	1	59	1	39	1	19	0	59	0	40	0	20
15 S.	α^2 Libræ ...3	4	1	3	41	3	21	3	2	2	42	2	22	2	3	1	43	1	23	1	3	0	44	0	24
75 N.	β Ursæ Min.3	4	10	3	50	3	30	3	11	2	51	2	31	2	12	1	52	1	32	1	12	0	53	0	33
9 S.	β Libræ ...2·3	4	27	4	7	3	48	3	29	3	9	2	49	2	30	2	10	1	50	1	30	1	11	0	51
27 N.	α Coro. Bor. 2	4	46	4	26	4	6	3	48	3	28	3	8	2	49	2	29	2	9	1	49	1	30	1	10
7 N.	α Serpentis. 2·3	4	55	4	35	4	15	3	57	3	37	3	17	2	58	2	38	2	18	1	58	1	39	1	19
78 N.	ζ Ursæ Min.4	5	8	4	48	4	28	4	9	3	50	3	30	3	11	2	51	2	31	2	11	1	52	1	32
19 S.	β^1 Scorpii ..2	5	14	4	54	4	34	4	15	3	56	3	36	3	17	2	57	2	37	2	17	1	58	1	38
3 S.	δ Ophiuchi. 3	5	24	5	4	4	44	4	25	4	6	3	46	3	27	3	7	2	47	2	27	2	8	1	48
26 S.	α Scorpii...1	5	38	5	18	4	58	4	39	4	19	4	0	3	41	3	21	3	1	2	41	2	22	2	2
62 N.	η Draconis .3	5	40	5	20	5	0	4	41	4	21	4	2	3	43	3	23	3	3	2	43	2	24	2	4
21 N.	β Herculis .2·3	5	42	5	22	5	2	4	43	4	23	4	3	3	45	3	25	3	5	2	45	2	26	2	6
69 S.	α Tria. Aust. 2	5	50	5	30	5	10	4	51	4	31	4	11	3	53	3	33	3	13	2	53	2	34	2	14
16 S.	η Ophiuchi .2·3	6	19	5	59	5	39	5	20	5	0	4	40	4	21	4	1	3	42	3	22	3	3	2	43
82 N.	ι Ursæ Min.4	6	20	6	0	5	40	5	21	5	1	4	41	4	22	4	2	3	43	3	23	3	4	2	44
15 N.	α Herculis. 3·4	6	26	6	6	5	46	5	27	5	7	4	47	4	28	4	8	3	49	3	29	3	10	2	50
89 S.	σ Octantis..6	6	41	6	21	6	1	5	42	5	22	5	2	4	43	4	23	4	3	3	44	3	25	3	5
52 N.	β Draconis .2	6	45	6	25	6	5	5	46	5	26	5	6	4	47	4	27	4	7	3	48	3	29	3	9
13 N.	α Ophiuchi .2	6	46	6	26	6	6	5	47	5	27	5	7	4	48	4	28	4	8	3	49	3	30	3	10
52 N.	γ Draconis .2	7	11	6	51	6	31	6	12	5	52	5	32	5	13	4	53	4	33	4	13	3	55	3	35
21 S.	μ Sagittarii. 3·4	7	23	7	3	6	43	6	24	6	4	5	44	5	25	5	5	4	45	4	25	4	7	3	47
87 N.	δ Ursæ Min.3	7	40	7	20	7	0	6	41	6	21	6	1	5	42	5	22	5	2	4	42	4	23	4	3
39 N.	α Lyræ 1	7	50	7	30	7	10	6	51	6	31	6	11	5	52	5	32	5	12	4	52	4	33	4	13
33 N.	β Lyræ 3	8	2	7	42	7	22	7	3	6	43	6	23	6	4	5	44	5	24	5	5	4	45	4	25
14 N.	ζ Aquilæ ..3	8	16	7	56	7	36	7	17	6	57	6	37	6	18	5	58	5	38	5	19	4	59	4	39
3 N.	δ Aquilæ ..3·4	8	36	8	16	7	56	7	37	7	17	6	57	6	38	6	18	5	58	5	39	5	19	4	59
10 N.	γ Aquilæ ..3	8	57	8	37	8	17	7	58	7	38	7	18	6	59	6	39	6	19	5	59	5	40	5	20
8 N.	α Aquilæ ..1·2	9	1	8	41	8	21	8	2	7	42	7	22	7	3	6	43	6	23	6	3	5	44	5	24
6 N.	β Aquilæ ..3·4	9	6	8	46	8	26	8	7	7	47	7	27	7	8	6	48	6	28	6	8	5	49	5	29
13 S.	α^2 Capricor. 3	9	32	9	12	8	52	8	33	8	13	7	53	7	34	7	14	6	54	6	34	6	15	5	55
57 S.	α Pavonis ..2	9	35	9	15	8	55	8	36	8	16	7	56	7	37	7	17	6	57	6	37	6	18	5	58
89 N.	λ Ursæ Min.5	9	39	9	19	8	59	8	40	8	20	8	0	7	41	7	21	7	1	6	41	6	22	6	2
45 N.	α Cygni. ..2	9	54	9	34	9	14	8	55	8	35	8	15	7	56	7	36	7	16	6	56	6	37	6	17
38 N.	61 Cygni ..5·6	10	17	9	57	9	37	9	19	8	59	8	39	8	20	8	0	7	40	7	20	7	1	6	41
30 N.	ζ Cygni....3	10	23	10	3	9	43	9	25	9	5	8	45	8	26	8	6	7	46	7	26	7	7	6	47
62 N.	α Cephei...3	10	32	10	12	9	52	9	34	9	14	8	54	8	35	8	15	7	55	7	35	7	16	6	56
6 S.	β Aquarii ..3	10	40	10	20	10	0	9	42	9	22	9	2	8	43	8	23	8	3	7	43	7	24	7	4
70 N.	β Cephei...3	10	44	10	24	10	4	9	46	9	26	9	6	8	47	8	27	8	7	7	47	7	28	7	8
9 N.	ι Pegasi ...2·3	10	54	10	34	10	14	9	56	9	36	9	16	8	57	8	37	8	17	7	57	7	38	7	18
1 S.	α Aquarii ..3	11	15	10	55	10	35	10	16	9	57	9	37	9	18	8	58	8	38	8	18	7	59	7	39
48 S.	α Gruis....2	11	15	10	55	10	35	10	16	9	57	9	37	9	18	8	58	8	38	8	18	7	59	7	39
10 N.	ζ Pegasi ...3	11	51	11	31	11	11	10	52	10	32	10	12	9	54	9	34	9	14	8	54	8	35	8	15
30 S.	α Pisc. Aust. 1	12	6	11	46	11	26	11	7	10	47	10	27	10	9	9	49	9	29	9	9	8	50	8	30
27 N.	β Pegasi ...2	12	13	11	53	11	33	11	14	10	54	10	34	10	15	9	56	9	36	9	16	8	57	8	37
14 N.	α Pegasi ...2	12	14	11	54	11	34	11	15	10	55	10	35	10	16	9	57	9	37	9	17	8	58	8	38
5 N.	ι Piscium..4·5	12	49	12	29	12	9	11	50	11	30	11	10	10	51	10	32	10	12	9	52	9	33	9	13
77 N.	γ Cephei...3	12	50	12	30	12	10	11	51	11	31	11	11	10	52	10	33	10	13	9	53	9	34	9	14

Declination.		NOVEMBER.												DECEMBER.											
		1.		6.		11.		16.		21.		26.		1.		6.		11.		16.		21.		26.	
°		H.	M.	H.	M.	H.	M.	H.	M.	H.	M.	H.	M.	H.	M.	H.	M.	H.	M.	H.	M.	H.	M.	H.	M.
28 N.	α Androm.. 1·2	9	16	8	57	8	37	8	18	7	58	7	38	7	18	6	58	6	39	6	19	5	59	5	40
58 N.	β Cassiop...2·3	9	17	8	58	8	38	8	19	7	59	7	39	7	19	6	59	6	40	6	20	6	0	5	41
14 N.	γ Pegasi ...2·3	9	21	9	2	8	42	8	23	8	3	7	43	7	23	7	3	6	44	6	24	6	4	5	45
78 S.	β Hydri ...3	9	34	9	15	8	55	8	36	8	16	7	56	7	36	7	16	6	57	6	37	6	17	5	58
43 S.	α Phœnicis 2	9	35	9	16	8	56	8	37	8	17	7	57	7	37	7	17	6	58	6	38	6	18	5	59
56 N.	α Cassiop...3	9	48	9	29	9	9	8	50	8	30	8	10	7	50	7	30	7	11	6	51	6	31	6	12
19 S.	β Ceti 2·3	9	52	9	33	9	13	8	54	8	34	8	14	7	54	7	34	7	15	6	55	6	35	6	16
35 N.	β Androm. 2	10	17	9	58	9	38	9	19	8	59	8	39	8	19	7	59	7	40	7	20	7	0	6	41
88 N.	Pole Star...2·3	10	19	10	0	9	40	9	21	9	1	8	41	8	21	8	1	7	42	7	22	7	2	6	43
9 S.	β^1 Ceti 3	10	32	10	13	9	53	9	34	9	14	8	54	8	34	8	14	7	55	7	35	7	15	6	56
58 S.	α Eridani ..1	10	48	10	29	10	9	9	50	9	30	9	10	8	50	8	30	8	11	7	51	7	31	7	12
23 N.	α Arietis...3	11	14	10	55	10	35	10	16	9	56	9	36	9	16	8	56	9	37	8	17	7	57	7	38
3 N.	γ Ceti 3	11	51	11	32	11	12	10	53	10	33	10	13	9	53	9	33	9	14	8	54	8	34	8	15
4 N.	ε Ceti 2·3	12	10	11	51	11	31	11	12	10	52	10	32	10	12	9	52	9	33	9	13	8	53	8	34
40 N.	β Persei ...2·3	12	14	11	55	11	35	11	16	10	56	10	36	10	16	9	56	9	37	9	17	8	57	8	38
49 N.	α Persei ...2·3	12	29	12	10	11	50	11	31	11	11	10	51	10	31	10	11	9	52	9	32	9	12	8	53
24 N.	η Tauri....3	12	54	12	35	12	15	11	56	11	36	11	16	10	56	10	36	10	17	9	57	9	37	9	18
14 S.	γ^1 Eridani ..2·3	13	7	12	48	12	28	12	9	11	49	11	29	11	9	10	49	10	30	10	10	9	50	9	31
16 N.	α Tauri....1	13	43	13	24	13	4	12	45	12	25	12	5	11	45	11	25	11	6	10	46	10	26	10	7
46 N.	α Aurigæ ..1	14	21	14	2	13	42	13	23	13	3	12	43	12	23	12	3	11	44	11	24	11	4	10	45
8 S.	β Orionis ..1	14	23	14	4	13	44	13	25	13	5	12	45	12	25	12	5	11	46	11	26	11	6	10	47
28 N.	β Tauri....2	14	33	14	14	13	54	13	35	13	15	12	55	12	35	12	15	11	56	11	36	11	16	10	57
6 N.	γ Orionis ..2	14	33	14	14	13	54	13	35	13	15	12	55	12	35	12	15	11	56	11	36	11	16	10	57
0 S.	δ Orionis ..2	14	40	14	21	14	1	13	42	13	22	13	2	12	42	12	22	12	3	11	43	11	23	11	4
18 S.	α Leporis ..3·4	14	42	14	23	14	3	13	44	13	24	13	4	12	44	12	24	12	5	11	45	11	25	11	6
1 S.	ι Orionis ..2·3	14	44	14	25	14	5	13	46	13	26	13	6	12	46	12	26	12	7	11	47	11	27	11	8
34 S.	α Columbæ 2	14	50	14	31	14	11	13	52	13	32	13	12	12	53	12	32	12	13	11	53	11	33	11	14
7 N.	α Orionis ..1	15	3	14	44	14	24	14	5	13	45	13	25	13	5	12	45	12	26	12	6	11	46	11	27
45 N.	β Aurigæ ..2	15	4	14	45	14	25	14	6	13	46	13	26	13	6	12	46	12	27	12	7	11	47	11	28
23 N.	μ Geminor.3	15	30	15	11	14	51	14	32	14	12	13	52	13	32	13	12	12	53	12	33	12	13	11	54
18 S.	β Canis Maj.2·3	15	32	15	13	14	53	14	34	14	14	13	54	13	34	13	14	12	55	12	35	12	15	11	56
53 S.	α Argus ...1	15	37	15	18	14	58	14	39	14	19	13	59	13	39	13	19	13	0	12	40	12	20	12	1
87 N.	51 Cephei ..6	15	43	15	24	15	4	14	45	14	25	14	5	13	45	13	25	13	6	12	46	12	26	12	7
17 S.	α Canis Maj.1	15	54	15	35	15	15	14	56	14	36	14	16	13	56	13	36	13	17	12	57	12	37	12	18
29 S.	ε Canis Maj.2·3	16	8	15	50	15	30	15	11	14	51	14	31	14	11	13	51	13	32	13	12	12	52	12	33
22 N.	δ Geminor..3·4	16	26	16	8	15	48	15	29	15	9	14	49	14	29	14	9	13	50	13	30	13	10	12	51
32 N.	α'' Geminor..1	16	40	16	21	16	1	15	43	15	23	15	3	14	43	14	23	14	4	13	44	13	24	13	5
6 N.	α Canis Min.1·2	16	46	16	27	16	7	15	49	15	29	15	9	14	49	14	29	14	10	13	50	13	30	13	11
28 N.	β Geminor. .2	16	51	16	32	16	12	15	54	15	34	15	14	14	54	14	34	14	15	13	55	13	35	13	16
24 S.	15 Argus ...3·4	17	16	16	57	16	37	16	19	15	59	15	39	15	19	14	59	14	40	14	20	14	0	13	41
47 S.	γ^2 Argus ...2	17	20	17	1	16	41	16	23	16	3	15	43	15	23	15	3	14	44	14	24	14	4	13	45
59 S.	ι Argus ...2	17	34	17	15	16	55	16	37	16	17	15	57	15	37	15	17	14	58	14	38	14	18	13	59
7 N.	ι Hydræ...4	17	54	17	35	17	15	16	57	16	37	16	17	15	57	15	37	15	18	14	58	14	38	14	19
49 N.	ι Ursæ Maj. 3·4	18	4	17	45	17	25	17	7	16	47	16	27	16	7	15	47	15	28	15	8	14	48	14	29
69 S.	β Argus ...2	18	26	18	7	17	47	17	28	17	8	16	48	16	28	16	8	15	50	15	30	15	10	14	51
59 S.	ι Argus....2	18	28	18	9	17	49	17	30	17	10	16	50	16	30	16	10	15	52	14	32	15	12	14	53
8 S.	α Hydræ...2	18	35	18	16	17	56	17	37	17	17	16	57	16	37	16	17	15	58	15	39	15	19	15	0
52 N.	θ Ursæ Maj.3	18	38	18	19	17	59	17	40	17	20	17	0	16	40	16	20	16	1	15	42	15	22	15	3
24 N.	ι Leonis ...3	18	52	18	33	18	13	17	54	17	34	17	14	16	54	16	34	16	15	15	56	15	36	15	17
13 N.	α Leonis ...1	19	15	18	56	18	36	18	17	17	57	17	37	17	17	16	57	16	38	16	18	15	58	15	40
21 N.	γ Leonis ...2	19	26	19	7	18	47	18	28	18	8	17	48	17	28	17	8	16	49	16	29	16	9	15	51
64 S.	δ^2 Argus ...2·3	19	52	19	33	19	13	18	54	18	34	18	14	17	54	17	34	17	15	16	55	16	35	16	16
59 S.	η Argus....1	19	54	19	35	19	15	18	56	18	36	18	16	17	56	17	36	17	17	16	57	16	37	16	18
57 N.	β Ursæ Maj. 2	20	7	19	48	19	28	19	9	18	49	18	29	18	9	17	49	17	30	17	10	16	50	16	31
63 N.	α Ursæ Maj. 1·2	20	9	19	50	19	30	19	11	18	51	18	31	18	11	17	51	17	32	17	12	16	52	16	33
21 N.	δ Leonis ...3	20	21	20	2	19	42	19	23	19	3	18	43	18	23	18	3	17	44	17	24	17	4	16	45
14 S.	δ Hydræ...3·4	20	27	20	8	19	48	19	29	19	9	18	49	18	29	18	9	17	50	17	30	17	10	16	51
15 N.	β Leonis ...2·3	20	56	20	37	20	17	19	58	19	38	19	18	18	58	18	38	18	19	17	59	17	39	17	20
55 N.	γ Ursæ Maj. 2	21	1	20	42	20	22	20	3	19	43	19	23	19	3	18	43	18	24	18	4	17	44	17	25
78 S.	β Chamæl. .5	21	24	21	5	20	45	20	26	20	6	19	46	19	26	19	6	18	47	18	27	18	7	17	48

Declination.		NOVEMBER.												DECEMBER.											
		1.		6.		11.		16.		21.		26.		1.		6.		11.		16.		21.		26.	
°		H.	M.	H.	M.	H.	M.	H.	M.	H.	M.	H.	M.	H.	M.	H.	M.	H.	M.	H.	M.	H.	M.	H.	M.
62 S.	α^2 Crucis ...1	21	33	21	14	20	54	20	35	20	15	19	55	19	35	19	15	18	56	18	36	18	16	17	57
56 S.	γ Crucis ...2·3	21	38	21	19	20	59	20	40	20	20	20	0	19	40	19	20	19	1	18	41	18	21	18	2
23 S.	β Corvi 2·3	21	41	21	22	21	2	20	43	20	23	20	3	19	43	19	23	19	4	18	44	18	24	18	5
59 S.	β Crucis ...2	21	53	21	35	21	15	20	56	20	36	20	16	19	56	19	36	19	17	18	57	18	37	18	18
39 N.	12 Can.Ven. 2	22	3	21	45	21	25	21	6	20	46	20	26	20	6	19	46	19	27	19	7	18	47	18	28
10 S.	α Virginis..1	22	31	22	12	21	53	21	34	21	14	20	54	20	34	20	14	19	55	19	35	19	15	18	56
50 N.	η Ursæ Maj. 2·3	22	55	22	36	22	16	21	57	21	38	21	18	20	58	20	38	20	19	19	59	19	39	19	20
19 N.	η Bootis....3	23	1	22	42	22	22	22	3	21	44	21	24	21	4	20	44	20	25	20	5	19	45	19	26
60 S.	β Centauri .1	23	7	22	48	22	28	22	9	21	50	21	30	21	10	20	50	20	31	20	11	19	51	19	32
36 S.	θ Centauri .2	23	12	22	53	22	33	22	14	21	54	21	35	21	15	20	55	20	36	20	16	19	56	19	37
65 N.	α Draconis .3	23	14	22	55	22	35	22	16	21	56	21	37	21	17	20	57	20	38	20	18	19	58	19	39
20 N.	α Bootis ...1	23	23	23	4	22	44	22	25	22	5	21	46	21	26	21	6	20	47	20	27	20	7	19	48
60 S.	α^3 Centauri .1	23	43	23	24	23	4	22	45	22	25	22	5	21	46	21	26	21	7	20	47	20	27	20	8
28 N.	ι Bootis....3	23	52	23	33	23	13	22	54	22	34	22	14	21	55	21	35	21	16	20	56	20	36	20	17
15 S.	α^2 Libræ ...3	23	56	23	37	23	17	22	58	22	38	22	18	21	59	21	39	21	20	21	0	20	40	20	21
75 N.	β Ursæ Min.3	0	9	23	46	23	26	23	7	22	47	22	27	22	8	21	48	21	29	21	9	20	49	20	30
9 S.	β Libræ ...2·3	0	27	0	8	23	44	23	25	23	5	22	45	22	25	22	5	21	47	21	27	21	7	20	48
27 N.	α Coro. Bor. 2	0	46	0	27	0	7	23	44	23	24	23	4	22	44	22	24	22	5	21	46	21	26	21	7
7 N.	α Serpentis .2·3	0	55	0	36	0	16	23	53	23	33	23	13	22	53	22	33	22	14	21	55	21	35	21	16
78 N.	ζ Ursæ Min. 4	1	9	0	49	0	29	0	10	23	46	23	26	23	6	22	46	22	27	22	7	21	48	21	29
19 S.	β^1 Scorpii ..2	1	15	0	55	0	35	0	16	23	52	23	32	23	12	22	52	22	33	22	13	21	54	21	35
3 S.	δ Ophiuchi.3	1	25	1	5	0	45	0	26	0	6	23	42	23	22	23	2	22	43	22	23	22	4	21	45
26 S.	α Scorpii...1	1	38	1	19	0	59	0	40	0	20	0	0	23	36	23	16	22	57	22	37	22	17	21	58
62 N.	η Draconis .3	1	40	1	21	1	1	0	42	0	22	0	2	23	38	23	18	22	59	22	39	22	19	22	0
21 N.	β Herculis .2·3	1	42	1	23	1	3	0	44	0	24	0	4	23	40	23	20	23	1	22	41	22	21	22	2
69 S.	α Tria.Aust. 2	1	50	1	31	1	11	0	52	0	32	0	12	23	48	23	28	23	9	22	49	22	29	22	10
16 S.	η Ophiuchi .2·3	2	19	2	0	1	40	1	21	1	1	0	41	0	21	0	1	23	38	23	18	22	58	22	39
82 N.	ι Ursæ Min. 4	2	20	2	1	1	41	1	22	1	2	0	42	0	22	0	2	23	39	23	19	22	59	22	40
15 N.	α Herculis..3·4	2	26	2	7	1	47	1	28	1	8	0	48	0	28	0	8	23	45	23	25	23	5	22	46
89 S.	σ Octantis..6	2	41	2	22	2	2	1	43	1	23	1	3	0	43	0	23	0	4	23	40	23	20	23	1
52 N.	β Draconis .2	2	45	2	26	2	6	1	47	1	27	1	7	0	47	0	27	0	8	23	44	23	24	23	5
13 N.	α Ophiuchi .2	2	46	2	27	2	7	1	48	1	28	1	8	0	48	0	28	0	9	23	45	23	25	23	6
52 N.	γ Draconis .2	3	11	2	52	2	32	2	13	1	53	1	33	1	13	0	53	0	34	0	14	23	50	23	31
21 S.	μ Sagittarii .3·4	3	23	3	4	2	44	2	25	2	5	1	45	1	25	1	5	0	46	0	26	0	6	23	43
87 N.	δ Ursæ Min. 3	3	40	3	21	3	1	2	42	2	22	2	2	1	42	1	22	1	3	0	43	0	23	0	4
39 N.	α Lyræ 1	3	50	3	31	3	11	2	52	2	32	2	12	1	52	1	32	1	13	0	53	0	33	0	14
33 N.	β Lyræ 3	4	2	3	43	3	23	3	4	2	44	2	24	2	4	1	44	1	25	1	5	0	45	0	26
14 N.	ζ Aquilæ ..3	4	16	3	57	3	37	3	18	2	58	2	38	2	18	1	58	1	39	1	19	0	59	0	40
3 N.	δ Aquilæ ..3·4	4	36	4	17	3	57	3	38	3	18	2	58	2	38	2	18	1	59	1	39	1	19	1	0
10 N.	γ Aquilæ ..3	4	56	4	37	4	17	3	58	3	39	3	19	2	59	2	39	2	19	2	0	1	40	1	21
8 N.	α Aquilæ ..1·2	5	0	4	41	4	21	4	2	3	43	3	23	3	3	2	43	2	24	2	4	1	44	1	25
6 N.	β Aquilæ...3·4	5	5	4	46	4	26	4	7	3	48	3	28	3	8	2	48	2	29	2	9	1	49	1	30
13 S.	α^2 Capricor. 3	5	31	5	12	4	52	4	33	4	13	3	54	3	34	3	14	2	55	2	35	2	15	1	56
57 S.	α Pavonis ..2	5	34	5	15	4	55	4	36	4	16	3	57	3	37	3	17	2	58	2	38	2	18	1	59
89 N.	λ Ursæ Min. 5	5	38	5	19	4	59	4	40	4	20	4	1	3	41	3	21	3	2	2	42	2	22	2	3
45 N.	α Cygni ...2	5	53	5	34	5	14	4	55	4	35	4	15	3	56	3	36	3	17	2	57	2	37	2	18
38 N.	61 Cygni ..5.6	6	17	5	58	5	38	5	19	4	59	4	39	4	20	4	0	3	41	3	21	3	1	2	42
30 N.	ζ Cygni ...3	6	23	6	4	5	44	5	25	5	5	4	45	4	26	4	6	3	47	3	27	3	7	2	48
62 N.	α Cephei...3	6	32	6	13	5	53	5	34	5	14	4	54	4	35	4	15	3	56	3	36	3	16	2	57
6 S.	β Aquarii ..3	6	40	6	21	6	1	5	42	5	22	5	2	4	43	4	23	4	4	3	44	3	24	3	5
70 N.	β Cephei ..3	6	44	6	25	6	5	5	46	5	26	5	6	4	46	4	26	4	7	3	48	3	28	3	9
9 N.	ι Pegasi'...2·3	6	54	6	35	6	15	5	56	5	36	5	16	4	56	4	36	4	17	3	58	3	38	3	19
1 S.	α Aquarii ..3	7	15	6	56	6	36	6	17	5	57	5	37	5	17	4	57	4	38	4	18	3	59	3	40
48 S.	α Gruis ...2	7	15	6	56	6	36	6	17	5	57	5	37	5	17	4	57	4	38	4	18	3	59	3	40
10 N.	ζ Pegasi ...3	7	51	7	32	7	12	6	53	6	33	6	13	5	53	5	33	5	14	4	54	4	35	4	16
30 S.	α Pisc. Aust.1	8	6	7	47	7	27	7	8	6	48	6	28	6	8	5	48	5	29	5	9	4	49	4	30
27 N.	β Pegasi ...2	8	13	7	54	7	34	7	15	6	55	6	35	6	15	5	55	5	36	5	16	4	56	4	37
14 N.	α Pegasi ...2	8	14	7	55	7	35	7	16	6	56	6	36	6	16	5	56	5	37	5	17	4	57	4	38
5 N.	ι Piscium ..4·5	8	49	8	30	8	10	7	51	7	31	7	11	6	51	6	31	6	12	5	52	5	32	5	13
77 N.	γ Cephei...3	8	50	8	31	8	11	7	52	7	32	7	12	6	52	6	32	6	13	5	53	5	33	5	14

USE OF THE FOREGOING TABLE.

1. Look in the Table for Ship Mean Time, adding 12^h thereto if it be A.M. The star opposite will be on the meridian, or nearly so, passing from E. to W.

2. Look in Table for Ship Mean Time, adding 12^h thereto if it be P.M. The star opposite will be on the meridian, or nearly so, passing from W. to E. (that is under the Pole.)

3. To find Meridian Altitude nearly when star passes from E. to W.

When latitude by account and declination have the same name, add 90° to the declination, and subtract the latitude by account. The remainder will be the meridian altitude nearly above point of horizon of different name from latitude by account.

When latitude by account and declination have different names, subtract the sum of latitude by account and declination from 90°; the remainder will be the meridian altitude nearly above point of horizon of different name from latitude by account. If the sum of latitude by account and declination be greater than 90°, the star will pass under the horizon, and cannot be seen.

4. For meridian passage from W. to E. (or under the Pole), reject 90° from sum of latitude by account and declination, the result will be the meridian altitude nearly above point of horizon of same name with latitude by account.

When sum of latitude by account and declination is less than 90°, the star will pass under the horizon from W. to E., and cannot be seen.

5. Having set sextant to meridian altitude, as found in 3 and 4, direct the view to S. or N. point of horizon, and vibrate. The image of the star will be seen near the horizon. Proceed then as in observing meridian altitude of sun; read off and compute the true latitude.

6. By proceeding as above, the seaman will soon acquire a facility in making the observation, and at the same time will acquire a correct acquaintance with the names and positions of the principal stars and constellations, and be able to find the latitude at any time whenever the stars are visible.

ALPHABETICAL LIST OF THE PRINCIPAL STARS AND CONSTELLATIONS.

	Magnitude.	Art.
Achernar . . . or, α Eridani . . .	1	138
Aldebaran . . . – α Tauri . . .	1	86
Algol – β Persei . . .	2	45
Alpheratz . . . – α Andromedæ .	2	41
Alamak – γ Andromedæ .	2	43
Algenib – γ Pegasi . . .	2	40
Antares – α Scorpii . . .	1	102
Altair – α Aquilæ . . .	1	63
Andromeda	. .	36
Andromedæ, α or, Alpheratz . .	2	41
Andromedæ, β – Mirach . . .	2	42
Andromedæ, γ – Alamak . . .	2	43
Aries	. .	81
Arietis, α. . . . or, Hamel	3	83
Aquila	. .	62
Aquilæ, α . . . or, Altair	1	63
Aquilæ, β, γ	3	63
Arcturus . . . or, α Bootis . . .	1	57
Auriga	. .	48
Aurigæ, α . . . or, Capella . . .	1	49
Aurigæ, β	2	50
Aurigæ, γ . . . or, Nath	2	51
Alphard . . . – α Hydræ . . .	1	124
Argo	. .	126
Argus, α or, Canopus . . .	1	127
Argus, β	2	128
Argus, δ, ι, ϑ, γ, ζ	2 & 3	129
Argus, η	1	130
Betelguese . . or, α Orionis . . .	1	113
Bellatrix . . . – γ Orionis . . .	2	114
Bootes	. .	56
Bootis, α or, Arcturus . . .	1	57
Canis Major	. .	117
Canis Majoris, α or, Sirius	1	118
Canis Minor	. .	120
Canis Minoris, α or, Procyon . . .	1	121
Columbæ, α	2	140
Cor Caroli . . or, 12 Can. Ven. .	2	76
Capella . . . – α Aurigæ. . .	1	49
Castor – α Geminorum .	1	89
Cassiopeia	. .	30
Cassiopeiæ, α . or, Schedir . . .	3	28
Cassiopeiæ, β	2	31
Cygnus	. .	53
Cygnus, α . . . or, Deneb	2	54
Canes Venatici	. .	75
Can. Ven., 12 . or, Cor Caroli . .	2	76
Canopus . . . – α Argus . . .	1	127
Centaurus	. .	132
Centauri, α & β	1	134
Centauri, ϑ	2	133
Crux	. .	132
Crucis, α	1	135
Crucis, β, γ, δ	2	135
Cetus	. .	105
Ceti, α or, Menkar . . .	2	106
Ceti, β	2	107
Corona Borealis	. .	70
Coronæ Bor., α or, Gemma . . .	2	71
Deneb – α Cygni . . .	2	54
Denebola . . . – β Leonis . . .	2	93
Draco	. .	65
Draconis, α	3	66
Draconis, β & γ	2	67
Dubhe or, α Ursæ Majoris	1	22
Eridanus	. .	136

	Magnitude.	Art.
Eridani, α . . . or, Achernar . . .	1	138
Fomalhaut	1	110
Gemma . . . or. α Coronæ Bor.	2	71
Gemini	. .	88
Geminorum, α . or, Castor	1	89
Geminorum, β. – Pollux	2	89
Gruis, α	2	142
Hercules	. .	78
Herculis, α	3	79
Hydra	. .	123
Hydræ, α. . . . or, Alphard . . .	1	124
Hamel – α Arietis . . .	3	83
Leo	. .	92
Leonis, α. . . . or, Regulus . . .	1	93
Leonis, β. . . . – Denebola . . .	2	93
Leonis, γ.	2	93
Lyra	. .	58
Lyræ, α Vega	1	60
Libra	. .	97
Libræ, α and β	2	99
Markab . . . or, α Pegasi . . .	2	39
Menkar . . . – α Ceti	2	106
Mirach . . . – β Andromedæ .	2	42
Mirfack . . . – α Persei . . .	2	44
Nath – β Tauri . . .	2	51
Ophiuchus	. .	78
Ophiuchi, α	2	79
Orion	. .	112
Orionis, α . . . or, Betelguese . .	1	113
Orionis, β . . . – Rigel	1	114
Orionis, γ . . . – Bellatrix . . .	2	114
Orionis, δ, ι, ζ.	. .	115
Pavonis, α	2	142
Pole Star . . . or, α Polaris . . .	2	26
Procyon . . . – α Canis Minoris	1	121
Pegasus	. .	34
Pegasi, α or, Markab . . .	2	39
Pegasi, β and γ – Skeat & Algenib	2	40
Pollux – β Geminorum .	2	89
Perseus	. .	37
Persei, α or, Mirfack . . .	2	44
Persei, β – Algol	3	45
Pisces Australes	. .	108
Piscium Aus. . or, Fomalhaut . .	1	110
Phœnicis, α	2	141
Regulus . . . or, α Leonis . . .	1	93
Rigel – β Orionis . . .	1	114
Scorpio	. .	101
Scorpii, α. . . . or, Antares . . .	1	102
Scorpii, β.	2	102
Sirius or, α Canis Majoris	1	118
Serpens	. .	73
Serpentis, α	2	74
Spica or, α Virginis . .	1	96
Skeat – β Pegasi . . .	2	40
Trianguli Aus. α	2	142
Taurus	. .	84
Tauri, α or, Aldebaran . .	1	86
Tauri, β – Nath	2	51
Ursa Major	. .	21
Ursæ Majoris, α or, Dubhe	1	22
Ursa Minor	. .	23
Ursæ Minoris, α or, Pole Star . . .	2	26
Virgo	. .	95
Virginis, α . . . or, Spica	1	96
Vega – α Lyræ . . .	1	60

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